83-2047

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No.

In the Supreme Court of the United States

October Term, 1983

MTD PRODUCTS INC,
Petitioner,

vs.

RADIO STEEL & MFG, CO.,
Respondent.

SUPPLEMENTAL APPENDIX TO PETITION FOR WRIT OF CERTIORARI

To the United States Court of Appeals
For the Federal Circuit

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EDITOR'S NOTE

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Drawing of Disassembled Accused MTD Wheelbarrow A102

Nov. 1, 1966 R. TONELLI 3,282,600

WHEELBARROW

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FIG. 1

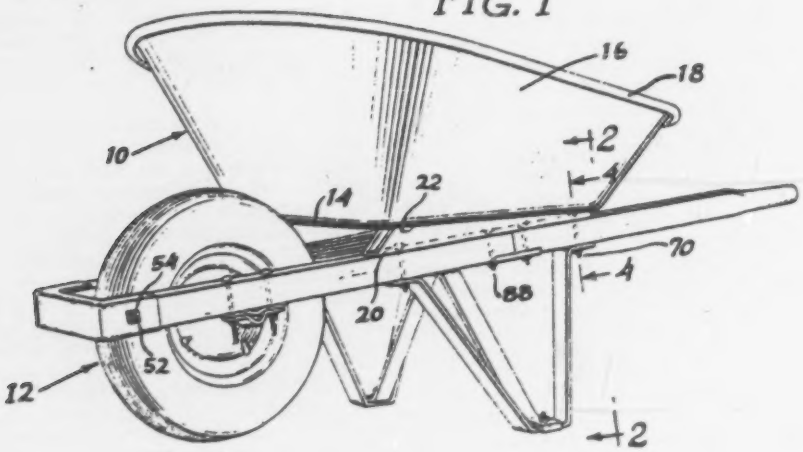
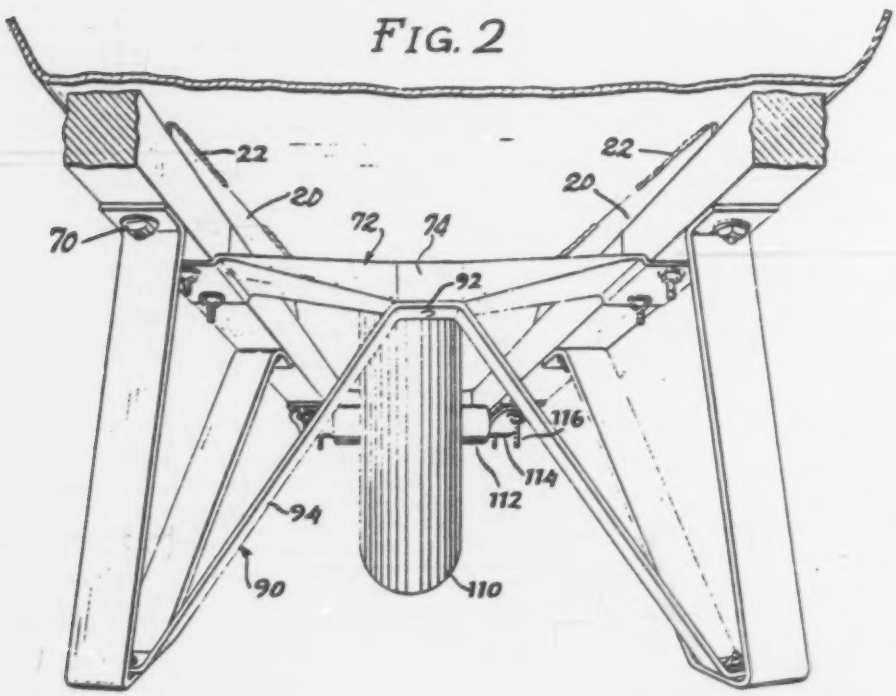


FIG. 2



INVENTOR
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Attys

Nov. 1, 1966 R. TONELLI 3,282,600

WHEELBARROW

Filed April 29, 1964 2 Sheets-Sheet 2

FIG. 3

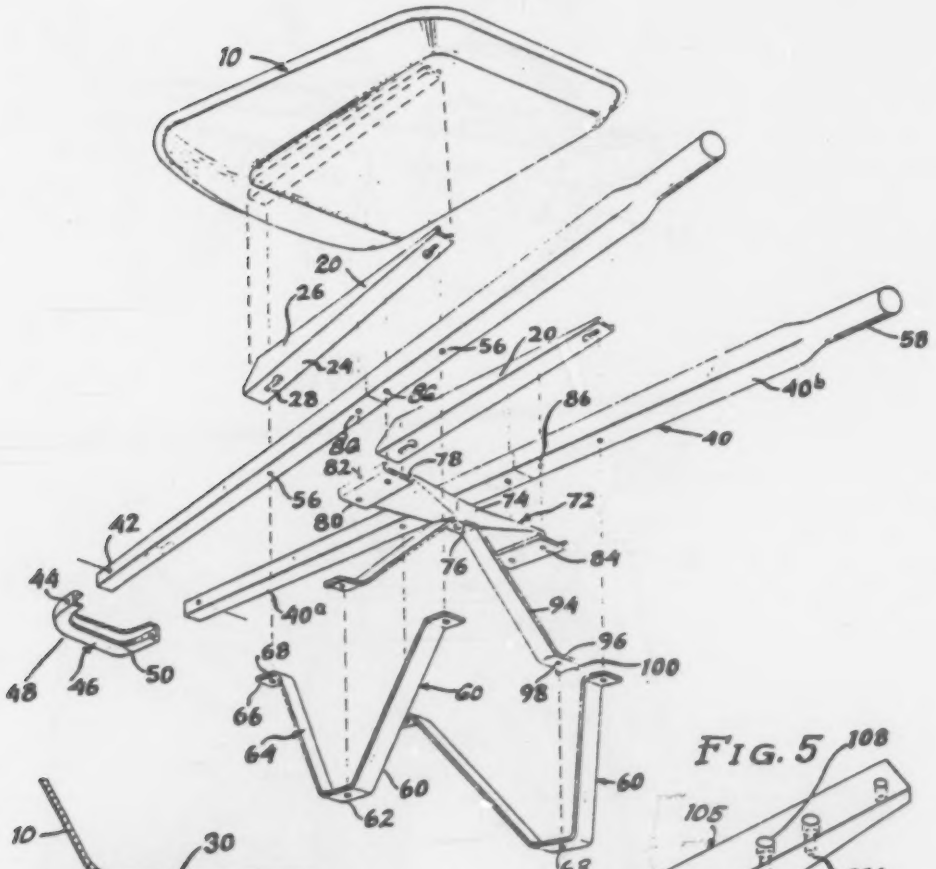
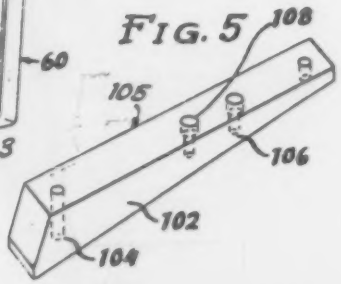


FIG. 5



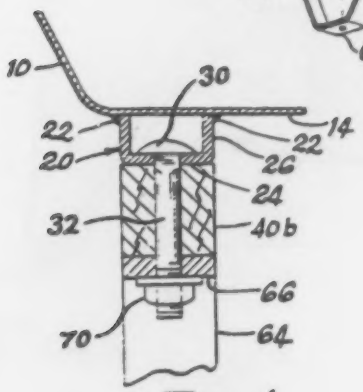


FIG. 4

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United States Patent Office

3,282,600
Patented Nov. 1, 1966

3,282,600

WHEELBARROW

Roger Tonelli, Chicago, Ill., assignor to Radio Steel & Mfg. Co., Chicago, Ill., a corporation of Illinois

Filed Apr. 29, 1964, Ser. No. 363,462
10 Claims. (Cl. 280—47.31)

This invention relates to a wheelbarrow and more particularly to a strong and rugged wheelbarrow such as may be used for construction work and in which the wheelbarrow can be fabricated, packaged, distributed and sold as separate elements in "knocked down" condition for assembly by the user to provide a new and improved wheelbarrow of rugged construction.

To the present, wheelbarrows have been fabricated and assembled at the factory for sale and distribution as an assembled product. Manufacture and assembly at the factory was believed necessary to achieve the desired ruggedness, strength and utility in the final product. However, when assembled, the wheelbarrow occupies considerable space thereby to render it impractical to house the assembled wheelbarrow in a package for shipment, storage and sale. Thus it has become the practice of the art to ship the assembled wheelbarrow without packaging and this exposes the assembled wheelbarrow to bumps and abrasions which often mar the finish or introduce imperfections into the construction thereof and thereby detract from the salability of the finished product. In addition, the large space occupied by the assembled wheelbarrow operates to increase the cost and expense from the standpoint of the shipment of the wheelbarrow. The large space requirement has effect also on the amount of space that can be made available for the display and for the inventory of the assembled product.

It is an object of this invention to produce a wheelbarrow of the type described which embodies a number of improvements not only in appearance but also in construction whereby greater strength and ruggedness is achieved, whereby less interference is had with the loading and unloading of the bowl portion of the wheelbarrow, and whereby greater utility can be effected and a number of economies can be experienced in the production, sale, distribution and use thereof.

Another object is to produce a wheelbarrow of the type described which can be fabricated of a number of separable parts which are easily and quickly assembled to produce a rugged and strong wheelbarrow but in which the parts can be packaged in their separated relationship to enable the entire wheelbarrow to be housed in a package of relatively small dimension and of a shape that can be easily handled thereby materially to reduce the cost of packaging, shipment, storage and display.

A further object is to produce a wheelbarrow of the type described which embodies a new and improved undercarriage construction or frame on which the bowl is supported to provide more ruggedness and strength in the assembly.

These and other objects and advantages of this invention will hereinafter appear, and for purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawing, in which:

FIG. 1 is a perspective side elevational view of the assembled wheelbarrow embodying the features of this invention:

FIG. 2 is a sectional elevational view taken along the line 2—2 of FIG. 1;

FIG. 3 is a perspective view of the separated parts of the wheelbarrow in their relative positions for assembly;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 1; and

FIG. 5 is a perspective view of a modified form of filler strip.

The wheelbarrow is formed of a dished bowl 10 of conventional construction and an under-carriage 12 which embodies the principal features of this invention.

The dished bowl 10 is formed to substantially rectangular shape from a single piece of sheet metal to provide a relatively flat bottom wall 14 and upwardly and outwardly inclined side walls 16 which terminate in a continuous rolled edge 18 at their upper ends.

In the preferred practice of this invention wherein use is made of a filler strip 20 in the form of a wedge shaped channel member secured as by welding, at 22, to the underside of the bowl in laterally spaced apart relation for attachment of the bowl to the under-carriage, the extension of securing bolts through the bottom wall 14 of the bowl 10 for attachment to the under-carriage can be eliminated, whereby the bowl presents a smooth surface which is uninterrupted by the heads of the bolts. Thus the bowl is free of projections in the bottom wall which function as dirt collectors or else interference with the movement of a shovel or the like implement over the bottom wall for shoveling or otherwise removing dry particulate material or slurries from the bowl. The ability to form the bowl of one piece of sheet metal without punchings to receive the attaching bolts operates also to provide for a stronger bowl and one that can be formed with less cost and with lesser numbers of operations and equipment.

The channel member 20, shown in greater detail in FIGS. 3 and 4, is formed with a bottom wall 24 and laterally spaced apart perpendicular side walls 26 which are secured at their upper edge, as by welding 22, to the underside of the bowl 10. The bottom walls are provided with longitudinally spaced apart key slots 28 with the key slots having an opening at one end of larger dimension to enable the heads 30 of carriage bolts 32 to pass through the openings but wherein the slots 28 are of smaller dimension than the head but of greater width than the shank of the carriage bolts to enable the latter to be displaced longitudinally therethrough to position the carriage bolts in the slot for attachment of the bowl to the under-carriage, as illustrated in FIGS. 1 and 4. Instead of making use of keyhole slots as illustrated, use can be made of slots extending inwardly from the ends of the channel members for longitudinal displacement of the carriage bolts therethrough to position of use.

An important feature of this invention resides in the subdivision of the elongate handle members 40, preferably formed of wood, but which also may be formed of other structurally strong materials such as metal, plastics, laminate or the like, into two parts, hereinafter referred to as the front piece 40^a and the rear piece 40^b. Each front piece 40^a is of square or rectangular shape in cross-section and is provided with an opening 42 extending crosswise and spaced from the forward edge by an amount to crosswise align the opening 42 with an opening 44 in a bumper plate 46 when the forward end portion of the front piece 40^a is received in fitting relationship within the channel section of the bumper member. The bumper member 46 is a metal member formed of a channel section having a base 48 in the form of a front wall and bail portions 50 extending perpendicularly rearwardly from the outer edges of the base and with the channel member having a central portion dimensioned to have a length corresponding with the spaced relationship between the forward ends of the front pieces 40^a and with the end portions turned to extend rearwardly at an

pieces and the base so that, in the assembled relationship, the forward end portions of the front pieces 40ª will be received in substantially fitting relationship between the bails 50 of the rearwardly turned portions while the forward edge of each of the front pieces will abut against the base thereby securely and rigidly to fix the bumper onto the front end of the front pieces and to tie in the front pieces one to the other through the bumper. Conventional fastening means, such as bolt 52 and nut 54, can be used to secure the bumper in the assembled relationship on the ends of the front pieces, as seen in FIG. 1. The bumper plate can also be formed with one or more vertically disposed and/or preferably horizontally disposed ribs extending forwardly from the front side of the base to provide a non-slip surface which may be used when rocking the wheelbarrow about the bumper as a pivot to give a forward dump of the content material from the bowl.

The outer ends of the front pieces 40ª and the inner ends of the rear pieces 40ᵇ are also formed to squa e of rectangular shape of substantially the same cross-section so that the rear piece will function as a continuation of the front piece when aligned with the forward end of the rear piece in abutting relationship with the rear end of the front piece. Openings 56 are provided to extend vertically through both the front and rear pieces in a portion spaced from the abutting ends and in position for vertical alignment with the slotted portions 28 in the filler strips for passage of the channel bolts 32 through said openings to effect attachment of the bowl and channel onto the handle portions. The outer ends of the rear pieces 40ᵇ are preferably mounted for use as a handle grip 58 but other configurations for gripping the handle may be employed.

The framing and the cross brace members comprise a combination of metal members including leg members 60 in the form of V-shaped members having a flat central foot portion 62 with an opening 63 extending therethrough and with portions adjacent the ends of the foot portion extending angularly forwardly to provide leg members 64 and with the end portions turned outwardly from the upper ends of the leg members to provide flat flanged sections 66 each having an opening 68 extending therethrough with the legs 64 spread apart by an amount to space the openings 68 one from the other by a distance corresponding to the spaced relationship between the openings 56 in the aligned front and back pieces of the handle so that the carriage bolt 32 can be inserted to extend continuously through the handle portion and the underlying flange 66 for threading a nut 70 onto the threaded through-extending end portion of the carriage bolt to interconnect the spaced legs, the handle portions and the channel strips fixed to the underside of the bolt. Thus the handle portions are secured in their assembled relation at spaced apart portions to the one piece filler strip on one side and to the one piece leg member on the opposite side securely to interconnect the handle portions in their assembled relationship one to the other and to the bolt.

The cross brace member 72 comprises an elongate metal member having a central portion 74 of channel shape with the bottom wall having a flat central portion 76 and with the end portions being formed with a downturned portion 78, a flat horizontally disposed portion 80, and an upwardly turned end flange 82 to define a lengthwise channel section therebetween dimensioned to have a width corresponding to the width of the abutting portions of the handle pieces 40ª and 40ᵇ for receiving the abutting end portions of the handle pieces therein. The base member 80 of each channel section is provided with longitudinally spaced apart openings 84 positioned to be vertically aligned with openings 86 provided to extend vertically through the handle pieces 40ª and 40ᵇ and spaced a short distance from the abutting ends. The channel sections in the opposite ends of the cross brace member 72 are spaced one from the other by an amount to correspond with the spaced relationship between the pair of handle pieces and the filler strips so as to receive the lower portions of the handle pieces, at their abutting ends, in fitting relationship within said channel sections of the cross brace members. The elements are secured in their assembled relationship by bolt and nut means 88 wherein the elongate bolts extend downwardly through the aligned openings in the handle pieces and the channel members 80 with a threaded end portion extending through and beyond the channel members threadably to receive a fastening nut. In the preferred practice, the head of the bolt can be welded directly onto the underside of the metal filler strip 20 to form a part thereof or else it can be inserted into the channel bracket of the filler strip by providing additional longitudinally aligned key slots of the type previously described and arranged to position the bolts in vertical registry with the aligned openings in the abutting ends of the handle pieces and the channel section of the cross brace member.

Also secured to form a part of the cross brace member is an inverted V-shaped metal member 90 having a central flat portion 92 at the apex of the V for attachment, as by welding or by riveting, to the underside of the central flat section 76 of the cross brace member. The portions outwardly of the central apex are turned angularly downwardly to extend laterally as legs 94 from the apex and the portions on the ends of the legs are bent to extend outwardly to provide a flat horizontally disposed flange 96 having an opening 98 through a central portion thereof. The spaced relationship between the flanged end portions 96 of the cross brace member corresponds to the laterally spaced apart relationship of the foot portions 62 of the leg members 60 so that the flanged portions 96 will rest on the foot portions 62 with the respective openings 98 and 64 in registry one with the other for interconnection, as by bolt and nut means. In such instances, it is desirable to form the underside of the foot with a countersink to receive the head of the bolt. While not essential, it is preferred to form the flanged portion 96 with a downwardly extending lip 100 on the ends to overlap the foot portion 62 and thereby give lateral support between the interconnected members.

As shown in FIG. 3 of the drawing, the entire assembly can be be broken down into separate pieces including the leg members 60, the cross brace member 72, the bumper 46, the two piece handle portions 40ª and 40ᵇ and the bowl 10 with the attached filler strips of channel section 20. The sectioned handle pieces, the leg members, the cross brace member and the bumper can all be received within the bowl to enable packaging of the entire assembly in a package large enough to receive the bowl. In the event that the length diagonally in the bowl is not sufficient to receive the sectioned handle portions, these may extend partly beyond the bowl or otherwise packaged to extend alongside the bowl.

In assembly, the carriage bolts 32 are positioned on the channel brackets. The center bolts 88 are inserted through the aligned openings in the handle portions and then the openings in the channel sections on the ends of the cross brace members are brought into position so that the threaded ends of the bolts 88 will extend therethrough and the nut members are thereafter threaded onto the through-extending portions to interconnect the spaced portions of the aligned handle sections with the one piece cross brace member and the one piece longitudinally extending filler strip.

The carriage bolts 32 on the outer ends of the filler strips are inserted through the outer of the spaced openings of the handle members and through the underlying openings in the flanges 66 at the upper ends of the leg members 64 and the nut members 70 are threaded onto the through-extending threaded end portion to interconnect the filler strip, leg members and additionally spaced portions of the handle sections. The legs 94 of the cross

brace member are bolted to the foot 62 of the leg member 64 and the bumper 46 is bolted onto the ends of the front pieces 40a to complete the assembly.

The filler strip in the form of the metal channel bracket 20 of FIGS. 1 and 4 can be replaced with a wooden filler strip of the type shown in FIG. 5 wherein the filler strip 105 is formed with the same four spaced apart openings 104 and 106 for the passage of the carriage bolts therethrough but wherein the filler strip is countersunk, as at 108, about the center openings 106 to enable the head of the carriage bolt to be received therein. In the use of the wooden filler strip of FIG. 5, the bottom wall of the bowl is formed with openings adapted to be aligned with the outer openings 104 in the filler strips for the insertion of the carriage bolts therethrough. In such event, the heads of the bolts will project upwardly from the bottom wall of the bowl unless the latter is countersunk.

The filler strips are tapered, as illustrated, to compensate for the angle which the handles make with the horizontal so that, when the filler strips are disposed between the handle portions and the underside of the bowl, the latter will be substantially horizontally disposed for fuller utilization of the capacity of the bowl.

The wheelbarrow is provided with the usual tired wheel 110 which is carried by the under-carriage in the opening between the laterally spaced handles 40 and by the bowl 10 and the bumper 46. For this purpose, an axle 112 is journalled at its ends between clamping plates 114 fixed to the underside of the front piece 40a of the handle by bolt and nut means 116. The wheel is rotatably mounted on the axle. In the assembled relation, each handle piece is secured in longitudinally spaced apart relation to the filler strip with one portion connected to the horizontally spaced apart portions of the one piece foot member while other portions are secured to the one piece cross brace member. Thus the handles are rigidly secured in the assembly. The handle members are gripped by the channel sections 80 of the cross brace member in a manner to militate against lateral displacement or relative movements between the sections. The supported legs of the cross brace member are inclined towards the foot piece of the leg members in a manner to prevent spread thereby to provide a rigid support while the legs of the foot members are fixed in their longitudinally spaced apart relation to the longitudinally spaced apart portions of the one piece filler strip to prevent spread or relative movements therebetween. The members are thus interconnected one to another in the assembly to provide a strong and fixed assembly having strength and stability as great as, if not greater than, that capable of being achieved by pre-assembled units of the type heretofore produced.

Further, the cross brace member and interconnected leg members provide a support in the undercarriage which has not been capable of achievement in assemblies heretofore produced and thereby to make available a wheelbarrow that can be employed for the heaviest jobs and under the most trying conditions.

The comfort and flexibility of a wooden handle is still retained without loss in rigidity or strength of the handle by reason of its being divided into two sections of shorter lengths. Aside from the advantages derived in the packaging of such two-piece handle members, the ability to make use of shorter lengths of wood for the handle pieces permits lower cost pieces of shorter lengths to be used in the fabrication of the handle members.

It will be apparent from the foregoing that I have provided a new and improved wheelbarrow having improved structural characteristics and strength and the ability to be knocked down into small units which can be easily packaged for shipment, storage and sale, and for the protection of the finished product.

It will be understood that changes may be made in the details of construction, arrangement and operation without departing from the spirit of the invention, especially as defined in the following claims.

I claim:

1. A wheelbarrow formed of separable parts including:
(1) a bowl;
(2) a pair of elongate handles each having a length greater than the bowl and in which each of the handles is separable into parts of substantially equal length;
(3) a bumper plate and means for mounting the bumper plate onto the ends of the assembled handles when in position of use;
(4) a cross brace member having channel shaped sections on the opposite ends spaced one from the other by an amount corresponding to the spaced relationship between the handles in their assembled relationship and having a width corresponding to the width of the handles in an intermediate portion thereof to receive the handle portions in fitting relationship within the channel sections and having a length dimensioned to extend beyond the ends of the handle pieces when aligned in abutting relationship one with the other to form the handle and means for securing the handle pieces in the channel sections of the cross brace member;
(5) a pair of leg members comprising elongate strips of a structurally strong material bent to V-shape with the apex of the V lowermost in the assembled relationship to provide a foot rest for the wheelbarrow and with the legs of the V-shaped members extending angularly upwardly and outwardly to engage portions of the handle pieces spaced longitudinally from the abutting edges and means for connecting the ends of the legs to the longitudinally spaced apart portions of the handle pieces and with the leg members spaced laterally one from the other by an amount corresponding to the spaced relationship between the assembled handles;
(6) means for connecting the handles in their laterally spaced apart relationship to the underside of the bowl;
(7) said cross brace member having a portion extending downwardly and outwardly from an intermediate portion thereof to the apex portions of each of the leg members and means for interconnecting said downwardly extending portions with the apex portions of the leg members to prevent spread of the legs and to provide vertical bracing; and
(8) a wheel, and means rotatably mounting the wheel onto the leg members between the forward end portions thereof.

2. A wheelbarrow comprising a bowl, a pair of elongate handles secured to the underside of the bowl in laterally spaced apart relation with each handle being formed of two pieces including a front piece and a rear piece with said pieces being aligned one with the other in end to end abutting relationship to form the handle, a bumper plate and means mounting the bumper plate on the forward ends of the front pieces to interconnect the front pieces in their assembled relation, a cross brace member extending crosswise between the handles and beneath the bowl with channel sections on the outer end portions of the cross brace member spaced one from the other by an amount corresponding to the spaced relationship between the handles and having a width dimensioned to correspond to the width of the handle portions to receive the handle portions therein in fitting relationship and means for securing the handle portions in the channel sections with the two pieces aligned in end to end relation and with the abutting ends in an intermediate portion of the channel section, said cross brace member also including members extending downwardly and outwardly laterally from the central portion thereof for a distance to space the ends by an amount corresponding to the spaced relationship between the handle portions, a pair of leg members formed

to V-shape with the upper ends of the V-shaped members being connected to longitudinally spaced apart portions of the handle pieces and means connecting the downwardly extending portion of the cross brace member with the apex portions of the leg members, a wheel and means rotatably mounting the wheel between the front pieces of the handle members.

3. A wheelbarrow as claimed in claim 2 in which the handles are wooden handles.

4. A wheelbarrow as claimed in claim 2 in which the bumper plate comprises a channel shaped member bent to U-shape with the central bail portion dimensioned to have a length corresponding to the spaced relationship between the ends of the handles.

5. A wheelbarrow as claimed in claim 4 in which the walls of the channel shaped bumper member are dimensioned to be spaced by an amount corresponding to the thickness of the handle end portions to receive the handle end portions therein with the forward end of each handle end portion lying in substantially abutting relationship with the back side of the bail portion to establish an interfitting relationship between the elements, and means for interconnecting the handle end portion and the bumper plate in their assembled relation.

6. A wheelbarrow as claimed in claim 2 in which the cross brace member comprises an intermediate portion of channel shape with the channel sections outwardly thereof.

7. A wheelbarrow as claimed in claim 2 in which the member extending downwardly and outwardly laterally from the central portion of the cross brace member comprises arms extending integrally laterally and downwardly from the central portion of the cross brace member for a distance corresponding to the spaced apex portions off the leg members.

8. A wheelbarrow as claimed in claim 7 in which the arms have flattened end portions lying in abutting relationship with the apex portions of the leg members and in which the means interconnecting the leg members to the cross brace members comprises means interconnecting the flattened end portions with the adjacent apex portions of the leg members.

9. A wheelbarrow as claimed in claim 8 in which the ends of the flattened end portions of the arms have downwardly turned end portions to provide a flange which abuts the outer edges of the apex portions of the leg members to prevent lateral spread therebetween.

10. A wheelbarrow as claimed in claim 2 in which the connection between the longitudinally spaced apart portions of the handle pieces and the upper end portions of the leg members include the bowl to rigidly secure the handle pieces, leg members and bowl together in their assembled relationship.

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1,630,975	5/1927	Smith	280—47.31

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METAL WHEELBARROW.

No. 187,549. Patented Feb. 20, 1877.

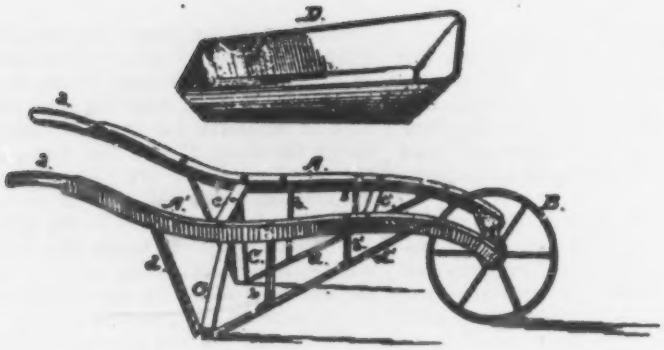

Fig. 1.

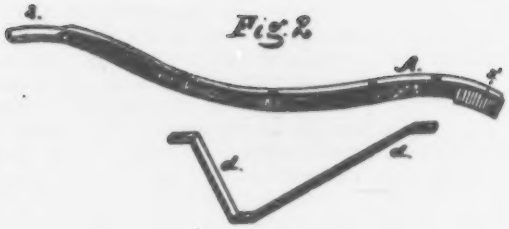

Fig. 2.

Witnesses:

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Inventors:

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Calvin Nutting, Jr.

by L. W. M. Smith

Attorneys.

UNITED STATES PATENT OFFICE.

CALVIN NUTTING AND CALVIN NUTTING, JR., OF SAN FRANCISCO, CAL.

IMPROVEMENT IN METAL WHEELBARROWS.

Specification forming part of Letters Patent No. 187,549, dated February 20, 1877; application filed January 3, 1877.

To all whom it may concern:

Be it known that we, CALVIN NUTTING and CALVIN NUTTING, Jr., of the city and county of San Francisco, in the State of California, have invented an Improvement in the Construction of Metallic Wheelbarrows and Trucks, of which the following is a specification:

The object we have in view is the production of a wheelbarrow for carrying heavy materials—such as ores—which will be light and durable in use and cheap in construction; and it consists, first, in the peculiar side pieces, made of angle-iron, with handles at one end and journal-boxes for the wheel-axle at the other; and, further, in the combination, construction, and arrangement of the several parts, all as more fully hereinafter explained.

To enable others skilled in the art to manufacture our wheelbarrow, we proceed to describe the same, having reference to the accompanying drawings, making a part hereof, in which—

Figure 1 is a perspective view of the frame and tray, with the tray detached; and Fig. 2, a separate view of one of the side pieces and braces.

Like letters denote corresponding parts in each figure.

A A′ are the side pieces of the barrow-frame, constructed of angle-iron, each having at one end a round curved handle, *a*, and at the other end a journal-box, *a′*, to receive the axle of the wheel B. These side pieces are bent into the shape shown in the drawing, with the handle ends curved upwardly, to bring the handles the proper height above the frame, and the opposite ends curved downwardly, to receive between them the wheel and support the barrow the desired distance from the ground. Metallic cross-pieces *c c′* connect the angle-iron side pieces A A′, and are secured, by bolts or rivets, to the horizontal flanges of the same. A brace, C, is secured centrally to the under side of the cross-piece *c*, and projects downwardly to the sides to form the supports or legs; and this brace is connected at its ends to the side braces *d d′*. These side braces *d d′* run lengthwise of the frame, one under each side piece, and are secured to the horizontal flanges of such side pieces, and to the ends of the brace C, and form, with the said brace C, the legs or supports for the wheelbarrow. Between the brace C and the forward ends of the side braces *d d′* are placed two or more metallic supports, *b b′*, which are secured to the said side braces, and to the side pieces A A′. These supports brace the frame of the wheelbarrow, and, being placed directly under the tray, assist to strengthen the frame at the point of the greatest strain.

F is the tray, of any convenient form, which is secured to the side and cross pieces by rivets or bolts, which may be the same that secure the braces and supports, or separate from them.

It will be observed that the pieces of the frame of the wheelbarrow and the tray are formed separately, and afterward secured in position wholly by screw-bolts or rivets, or by bolts and rivets together, as may be found convenient and desirable.

By the use of angle-iron in the construction of frames and bodies of wheelbarrows less weight of iron is required, and the material can be worked and handled in the process of manufacture in a better manner, and with less danger of weakening the frame in bending and punching the iron, than in the case of the employment of iron of other shapes.

Much trouble has been experienced in the manufacture of iron wheelbarrows, and the frames have been more or less defective, and unable to resist the weight and strain of heavy loads, more especially in mining work. These defects and objections have, however, been removed and obviated by the employment of our invention in the construction of wheelbarrows, and a cheaper as well as a stronger and more durable article is therefore the result.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a metallic wheelbarrow, the separate side pieces A A′, curved substantially as shown, made from angle-iron, and having at one end the handles *a*, and at the other the

journal-boxes a' for the wheel-axle, constructed and arranged substantially as and for the purposes set forth.

2. In a metallic wheelbarrow, the combination of the separate angle-iron side pieces A A', cross-pieces c c', brace C, side braces d d', and supports b b', constructed and arranged substantially as described and shown.

In testimony that we claim the foregoing we have hereunto set our hands this 22d day of December, 1876.

CALVIN NUTTING.
CALVIN NUTTING, Jr.

Witnesses:
WILLIAM HARNEY,
EDWARD R. OSBORN.

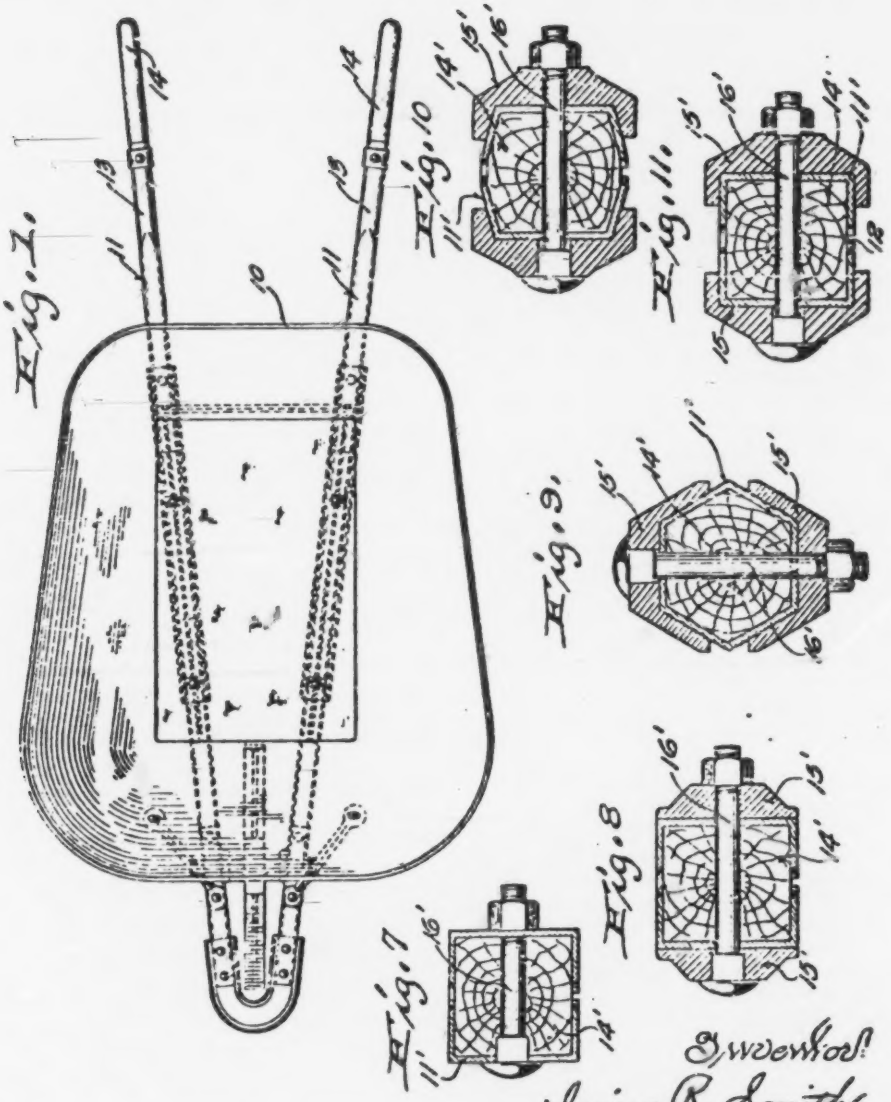
A62

March 29, 1927. 1,622,354

I. P. SMITH

WHEELBARROW

Filed May 24, 1923 2 Sheets-Sheet 1



Inventor
Irving R. Smith.
By Morrell, Kenny & Morrell.
Attorneys.

A63

March 29, 1927. 1,622,354

I. R. SMITH

WHEELBARROW

Filed May 24, 1923 2 Sheets-Sheet 2

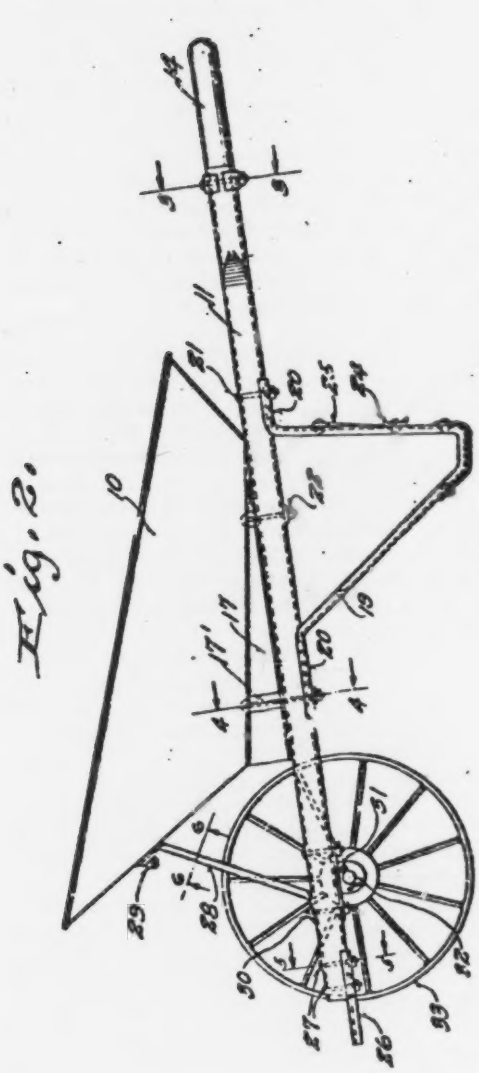


Fig. 2.

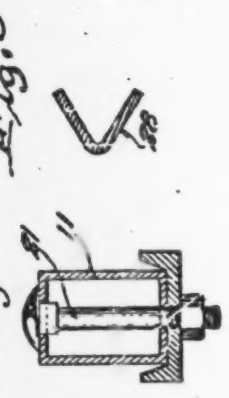


Fig. 5

Fig. 6

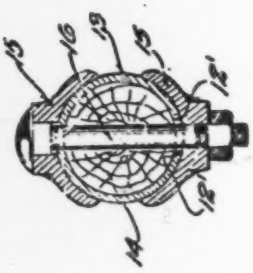


Fig. 3

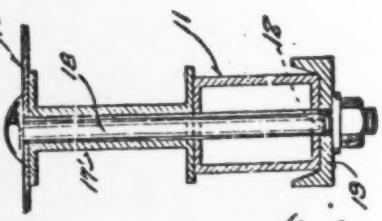


Fig. 4

Inventor

Irving R. Smith.

By Morrell, Kenney & Morrell

Attorneys.

Patented Mar. 29, 1927. 1,622,354

UNITED STATES PATENT OFFICE.

IRVING R. SMITH, OF WAUWATOSA, WISCONSIN.

WHEELBARROW.

Application filed May 24, 1923. Serial No. 641,105.

This invention relates to wheelbarrows, and more particularly to wheelbarrows made of sheet metal.

This invention has for its particular object the construction of a wheelbarrow made almost completely of sheet metal, the construction of which offers the possibility of minimizing the cost of production without sacrificing to any extent the strength and durability of the device.

The invention, therefore, consists essentially in the combination, construction and arrangement of parts, all of which will be made more apparent hereinafter, as the description proceeds, especially when considered in connection with the accompanying drawings wherein;

Figure 1 is a top plan view of the wheelbarrow construction in accordance with this invention;

Fig. 2 is a side elevation of the wheelbarrow;

Fig. 3 is a detail sectional view, taken substantially on the plane indicated by the line 3—3 in Fig. 2;

Fig. 4 is a sectional view, taken on the plane indicated by the line 4—4 in Fig. 2;

Fig. 5 is a sectional view taken on the plane indicated by the line 5—5 in Fig. 2;

Fig. 6 is a sectional view, taken on the plane indicated by the line 6—6 of Fig. 2; and,

Figs. 7 to 11 inclusive are detail sectional views, showing modified forms of arms and means for connecting the handles thereto.

Referring now to the drawings, and more particularly to Figs. 1 to 6 inclusive, the preferred embodiment of the invention will be first described. The reference character 10 indicates the hopper or body of the wheelbarrow, which is formed of sheet metal and is supported upon a pair of longitudinally extending arms 11. These arms are formed of sheet metal, bent to form hollow members, substantially rectangular in cross section. The arms 11 are disposed so that the joint 12 thereof is arranged along the bottom or lower side of each of the arms 11.

The rear ends of the arms 11 are rounded as at 13, and are adapted to receive the wooden handles 14, which project therein a short distance. The edges 12′ of the portion of each arm 11 which is rounded, are spaced a greater distance apart than the joint 12, so that the rounded portions 13 of the arms 12, may be securely clamped around the handles 14. The clamps for accomplishing this consists of a pair of members 15 and a bolt 16, which connects the clamp members 15 and extends through the arm and handle to securely clamp and unite these members.

Interposed between the hopper 10 and arms 11 are channel bars 17, which are arranged on their edge, or in other words, in a vertical plane with the flanges thereof engaging the hopper and arms respectively. As illustrated, if it is desired to incline the hopper, these angle bars may be tapered longitudinally.

Adjacent the forward portion of the hopper, bolts 18 are provided which extend downwardly through the bottom of the hopper 10, through the channel bars 17, through the arms 11, and also through the adjacent end of supporting legs 19, thus securely uniting these parts. The channel bars 17 are formed with enlargements 17′, providing sufficient material to permit of a passageway for the securing bolt 18.

The supporting legs 19 are formed of channel bar members, and are preferably shaped, as clearly illustrated in Fig. 2. The ends 20 of each leg 19 lay in a substantially parallel plane, and engage the under side of the associated arm 11, the arm engaging in the channel side of the leg. In addition to the bolt 18 each leg is provided with an additional bolt 21, while one or more additional bolts 22 may be provided which extends through the hopper 10, channel bars 17 and arm 11.

Each of the legs 19 is reinforced by a metal reinforcing plate 23, the legs being preferably connected together by a cross strip 24 and a diagonally extending brace 25.

The front ends of the arms 11 are connected by a curved channel bar 26, secured to the arms 11 by means of bolts 27.

The front portion of the hopper is additionally braced by means of arms 28, which are substantially V-shaped in cross-section, these arms being connected by bolts 29 to the hopper, and by bolts 30 to the arms 11.

Secured to the forward ends of the arms 11 are journals 31, which provide a mounting for the axle 32 of the wheelbarrow wheel 33.

In Figs. 7 to 11 inclusive, there are illustrated several modifications of the arms 11, and the means for attaching the wooden handles thereto. In each instance the

handle is indicated by the reference character 14'. In each of these figures there is provided a bolt 16' which is adapted to clamp the clamping members together. In Fig. 7 the bolt 16' merely passes through the arm 11' and the handle 14'. In the other figures, however, clamping members 15' are provided, the cross-sectional shape of which, however, is varied according to the cross-sectional shape of the arms 11' and wooden handle 14'. From these modified forms of construction it will be immediately apparent that the connection between the ends of the arms 11 or 11', and the handles 14 or 14', may be accomplished in various ways, the connection in each instance, however, being such that if desired, the wooden handles may be removed and replaced when occasion demands.

The construction of the wheelbarrow herein described, insures rigidity and durability combined with cheapness in manufacture and a minimum weight in the finished article. The longitudinally extending arms 11, which are made of sheet metal, may, because of their substantially rectangular shape in cross-section, be made extremely strong and durable for their weight, and when braced by the supporting legs and connections with the hopper body, produce a structure which is durable in every respect. Furthermore, the assembling of the wheelbarrow is facilitated because of the arrangement of the connecting bolts.

While the invention has been described in some detail herein, it is not intended that the same should be unnecessarily limited, but reservation is made to make such changes in the form thereof as may come within the purview of the accompanying claims.

Having thus described the invention what is claimed is:

1. A metal wheelbarrow comprising a hopper, a pair of longitudinally extending arms formed of sheet metal bent to the desired shape, a channel iron connecting said arms at their forward ends, braces connecting said arms to said hopper, channel bars disposed between said hopper and arms, channel shaped legs secured to said arms, handles in the rearward ends of said arms and means for securing said handles in place.

2. A metal wheelbarrow comprising a hopper, a pair of longitudinally extending arms formed of sheet metal bent to the desired shape, a channel iron connecting said arms at their forward ends, channel bars disposed between said hopper and arms, channel shaped legs secured to said arms with their forward ends under and adjacent the front end of said hopper, bolts passing through said hopper, channel bars, arms and legs for uniting these parts, handles in the rearward ends of said arms and means for securing said handles in place.

3. A metal wheelbarrow comprising a hopper, a pair of longitudinally extending arms formed of sheet metal bent to the desired shape, a channel iron connecting said arms at their forward ends, channel bars arranged on edge and disposed between said hopper and arms, channel shaped legs secured to said arms, wooden handles extending into the rearward ends of said arms and clamping means engaging said arms and handles for securing said parts together.

4. A sheet metal wheelbarrow comprising a hopper, a pair of hollow sheet metal longitudinally extending arms, channel bars arranged on edge and disposed between said hopper and arms, legs formed of channel bars bolted to said arms with their channel faces engaging said arms with their forward ends under and adjacent the front of said hopper, braces V-shaped in cross-section connecting said hopper to said arms at the front thereof and handles fitted into said hollow arms at their rearward ends.

5. A sheet metal wheelbarrow comprising a hopper, a pair of longitudinally extending hollow arms substantially rectangular in cross-section, a curved channel bar connecting said arms at their forward ends, vertically arranged channel bars positioned between said hopper and arms, reinforced and braced legs secured to said arms, said legs being formed of channel bars engaging said arms with their channels, securing bolts passing through said hopper, channel bars, arms and legs, handles fitted into the rearward ends of said arms and clamping means for securing said handles in place.

In testimony whereof, I affix my signature.

IRVING R. SMITH.

May 31, 1927. 1,630,975

I. R. SMITH

WHEELBARROW

Filed Oct. 25, 1925

Fig. 1

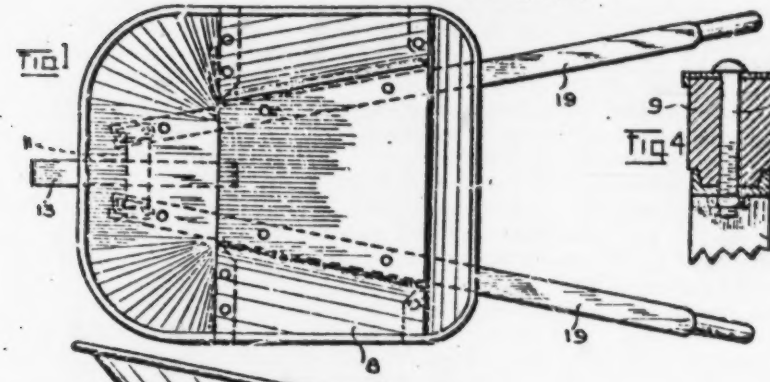


Fig. 4

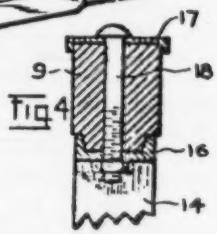


Fig. 2

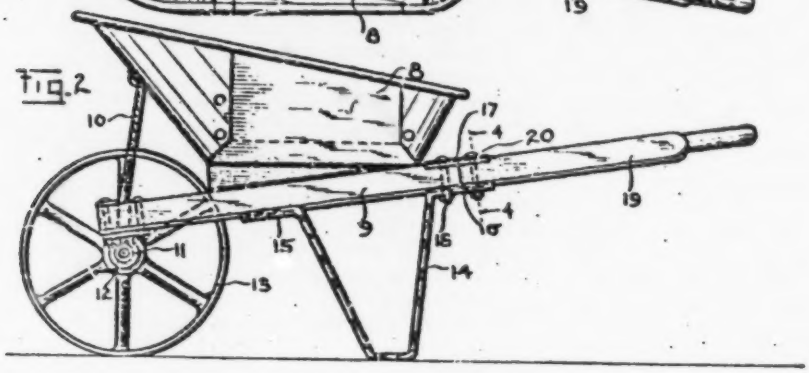
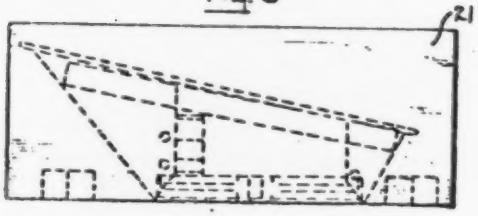


Fig. 3



INVENTOR
Irving R. Smith
BY
Neill, Kenney & Monell
ATTORNEYS

Patented May 31, 1927. A67 1,630,975

UNITED STATES PATENT OFFICE.

IRVING R. SMITH, OF WAUWATOSA, WISCONSIN, ASSIGNOR TO STERLING WHEELBARROW COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

WHEELBARROW.

Application filed October 26, 1925. Serial No. 64,582.

This invention relates to improvements in wheelbarrows, and more particularly to a knock-down or sectional wheelbarrow.

It is one of the objects of the present invention to provide a wheelbarrow suited for home or garden use and arranged for the ready detachment and attachment of the handles, wheel and other units to permit the packing of the wheelbarrow in a small compact box or container for shipment.

A further object of the invention is to provide a wheelbarrow arranged for the removal of all of the constituent elements from the hopper whereby the hopper may be packed in a carton or box of minimum size with the remaining wheelbarrow elements within the hopper and unoccupied portions of the carton.

A further object of the invention is to provide a sectional wheelbarrow, which when assembled, is strong and efficient in operation.

A further object of the invention is to provide a sectional wheelbarrow of the class described which is of very simple construction, is strong and durable, is easily assembled and disassembled, is conveniently packed, and is well adapted for the purposes described.

With the above and other objects in view the invention consists of the improved sectional wheelbarrow and its parts and combinations as set forth in the claims and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a plan view of the improved wheelbarrow;

Fig. 2 is a side view thereof;

Fig. 3 is a view of a carton showing the manner in which the wheelbarrow is packed therein when disassembled; and

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2 and on a larger scale.

Referring now more particularly to the drawing it will appear that the numeral 8 indicates the hopper or body of the wheelbarrow, which is preferably formed of sheet metal, and is supported upon a pair of longitudinally extending arms 9. A pair of forward supports 10 depend from the front portion of the hopper and are bolted to the forward end portions of the arms 9. Said arms also have bolted to their lower surfaces bearing members 11 in which an axle 12 is journaled, said axle carrying a wheel 13.

A pair of legs 14, of substantially U formation are provided to support the wheelbarrow in a horizontal position and said legs engage the under surfaces of the arms 9. As will be seen the legs are channeled and the forward flanged channeled portions 15 firmly engage the arms while the rear flanged channeled portions 16 extend beyond the ends of the arms. Channeled plates 17 are provided for the upper portions of said arms and said plates project outwardly evenly with said flanged portions 16. Bolts 18 are passed through said arms, the plates and the portions 16 of the legs to removably secure the legs to the arms, while arm extension members or handles 19 have their inner end portions clamped between the extending portions of the plates and flanged portions 16, bolts 20 being passed therethrough to provide removable attaching means.

To disassemble the wheelbarrow it is merely necessary to remove the bolts 18 and 20 which permit the detachment of the handles 19 and the legs 14. The hopper 8 can then be removed from the members 9 by unbolting the braces 10 and the bearing members 11 can likewise be unbolted to permit the removal of the axle and wheel. In this manner the wheelbarrow can be separated into a number of smaller, easily packed units.

As was mentioned the sectional construction of the wheelbarrow makes it well suited for convenient packing and shipment. For this purpose an ordinary carton 21 of suitable size may be used and the position the separated wheelbarrow units occupy therein is clearly illustrated in Fig. 3. The hopper, of course, fills most of the carton and the wheel axle, bearings, plates, nuts and bolts, and other small parts can be disposed within the hopper. The handles, arms, and legs may be conveniently fitted into other unoccupied portions of the carton.

From the foregoing description it will be seen that the improved sectional wheelbarrow is of very simple and novel construction, and is well adapted for the purposes set forth.

What I claim as my invention is:

1. A sectional wheelbarrow, comprising a pair of arms, a hopper removably mounted

thereon, a bearing member removably bolted to the forward end portion of each of said arms, an axle journaled in said bearing members, a wheel carried by said axle, a pair of legs engaging said arms and having flanged end portions extending beyond the extremities of said arms, plates engaging said arms and extending beyond the extremities of the same, bolts engaging said plates, arms, and the flanged end portions of said legs, handles engaged by the projecting portions of said plates and leg flanges, and bolts engaging the handles, plates and leg flanges.

2. A sectional wheelbarrow, comprising a pair of arms, a hopper removably mounted thereon, a wheel removably secured to and depending from the forward portions of said arms, a pair of legs engaging said arms and having flanged end portions extending beyond the extremities of said arms, plates engaging said arms and extending beyond the extremities of the same, members engaging said plates, arms, and the flanged end portions of said legs, handles engaged by the projecting portions of said plates and by the leg flanges, and members engaging the handles, plates and leg flanges.

In testimony whereof, I affix my signature.

IRVING R. SMITH.

J. G. HARRISON.

Wheelbarrows.

No. 155,084. Patented Sept. 15, 1874.

Fig: 1

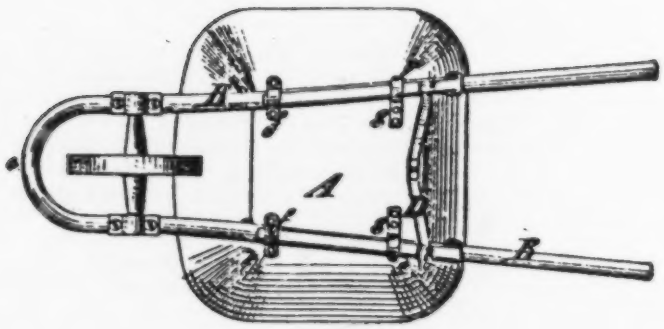
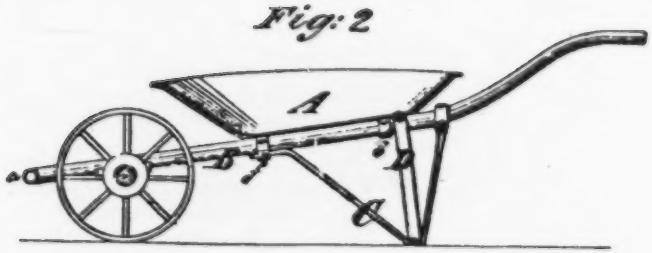


Fig: 2



Witnesses:
Michael Ryan
Fred Harney

J. G. Harrison
by his Attorneys
Brown & Allen

THE STAPLING CO. PHOTO-LITHO. 43 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JOSEPH G. HARRISON, OF NEW YORK, N. Y., ASSIGNOR TO THE TUBULAR BARROW AND TRUCK MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN WHEELBARROWS.

Specification forming part of Letters Patent No. **155,084**, dated September 15, 1874; application filed August 4, 1873.

To all whom it may concern:

Be it known that I, JOSEPH G. HARRISON, of the city, county, and State of New York, have invented an Improvement in Wheelbarrows, of which the following is a specification:

This invention relates particularly to wheelbarrows made wholly or for the most part of metal.

Ordinarily the frames of such barrows, including the handles, are made tubular, and are attached to their bodies by bolts passing directly through them. This materially weakens the barrows, and in time they are liable to break away at the bolt-holes.

The object of this invention is to obtain a better method of fastening the frames and bodies of the barrows together, so as to obviate this defect.

To this end the invention consists in the combination of tubular handles connected together by a rod of metal or other material, which is bent in front in a semicircular form, thus forming a guard for the wheel, said handles serving to support the tray, while the legs are secured upon the handles by clips or straps connected with the handles at suitable points, and riveted to the tray, so that all perforating of the handles is dispensed with.

In the accompanying drawings, Figure 1 is an inverted plan of a barrow having my improvements applied, and Fig. 2 is a central longitudinal section of the same.

Similar letters of reference indicate corresponding parts in both figures.

A is the body or tray of the barrow. It may be made of sheet metal in the usual way. Its frame is made of tubular handles B B, connected in front by a semicircular rod or bar, *a*, or may be formed in one piece with the semicircular portion *a*, thus forming a guard directly in front of the wheel. The handles are bent upward, as usual, to enable them to be conveniently reached. The legs C C of the barrow consist of sheet-metal strips, which are clasped at one end round its handle, just in the rear of the tray, and thence are bent downward to the required length, to support the barrow in the position it is desired to assume. From this point the strips are bent up to the fore part of the handles, and are there secured by the clips, which attach the fore part of the handles to the tray, as I will presently describe. The legs thus formed are braced laterally by an intermediate strip of metal, D, secured at its ends to the ends of the legs, and at its middle to the tray of the barrow by a rivet or bolt. The clips which secure the frame of the barrow and its tray together consist simply of straps of metal, *f* and *s*. The clips *f* embrace the fore part of the handles, and likewise the corresponding portions of the legs, and are fastened to the tray by rivets passing through their ends. The clips *s* are riveted to the tray at one end, and are bent over the handles so as to embrace and hold them, as illustrated in Fig. 1.

Barrows thus made are much stronger than those constructed in the old manner, and are a great deal more durable.

I do not broadly claim the employment of tubular handles in the construction of wheelbarrows, for such is set forth in the Letters Patent granted to B. W. Tuthill, dated January 3, 1871, and reissued April 17, 1871, which is hereby disclaimed.

What I claim is—

The tubular handles B B, having the semicircular portion *a* to form a guard directly in front of the wheel, in combination with the tray A, frame C, legs D, and clips *f s*, substantially as described.

JOSEPH G. HARRISON.

Witnesses:
HENRY T. BROWN,
MICHAEL RYAN.

(No Model.)

G. M. SHUMAKER.

WHEELBARROW.

No. 258,323. Patented May 23, 1882.

Fig: 1.

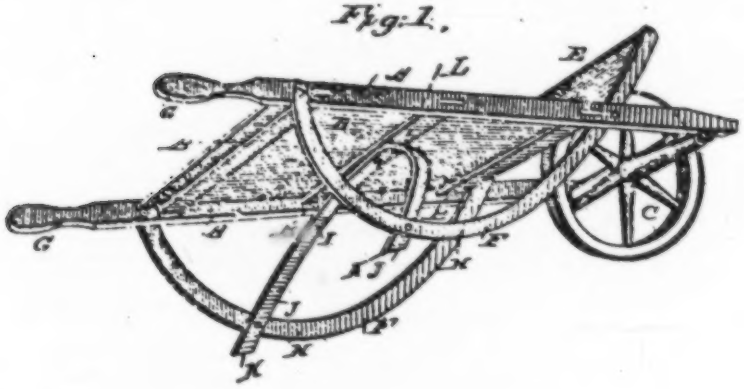


Fig: 2.

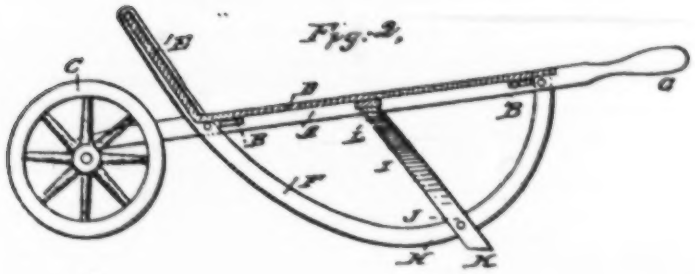


Fig: 3.

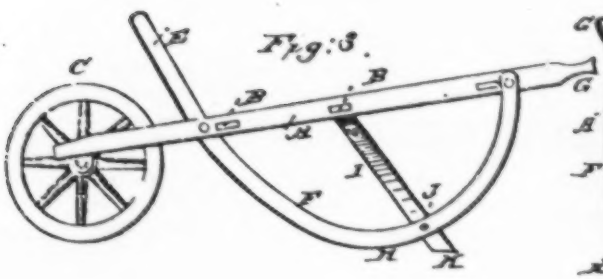
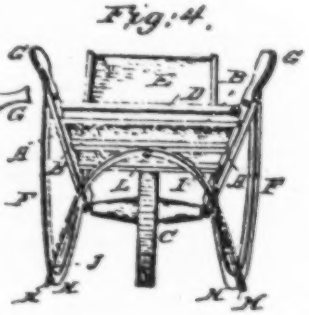


Fig: 4.



WITNESSES:

Fred. L. Dieterich.

Jno. W. Stockett

INVENTOR

G. M. Shumaker,

by Cushman & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE M. SHUMAKER, OF PIERCETON, INDIANA.

WHEELBARROW.

SPECIFICATION forming part of Letters Patent No. 258,323, dated May 23, 1882.

Application filed March 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. SHUMAKER, of Pierceton, in the county of Koscinsko and State of Indiana, have invented certain new and useful Improvements in Wheelbarrows and Trucks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of this invention is to provide a simple, durable, inexpensive, and efficient wheelbarrow or truck.

In the drawings, Figure 1 is a perspective view; Fig. 2, a longitudinal sectional view; Fig. 3, a side view, and Fig. 4 an end view.

Referring by letter to the drawings, A A designate the longitudinal side beams, connected by cross-pieces B B, and having journaled between their forward ends the wheel C in the usual manner. D is the usual platform or bottom, and E the end wall.

F F are two downwardly-curved supports and braces, which are bolted, one on each side, to the side beams, A A, their rear ends being secured at a point near the rear or handle end, G, of the beams A A, and their forward ends at or near the wall E. The central or lowermost portions, H, of the curved braces F F rest upon the ground, and thus support the body of the wheelbarrow.

I is a semicircular forwardly-inclined transverse brace and support, formed of a single piece, having its ends J J secured to the curved braces F F at a point in rear of where they rest on the ground, as shown at K, and continued downwardly till they reach the ground, thus forming an auxiliary support. The central portion, L, of transverse semicircular or arched brace I is secured to one of the cross-bars B B on the under side of platform D, at or near the center thereof, thus supporting the body of the wheelbarrow at its weakest point.

If desired, the longitudinal curved braces and supports F F may be continued upwardly at their forward ends to form the end pieces of wall E.

The advantages and functions of my invention will be readily understood. By this construction I am enabled to produce a wheelbarrow of great strength and durability, combined with lightness in weight, at a comparatively small cost. The weight of the load is more equally distributed to the supporting parts and the wheel relieved from strain.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a wheelbarrow or truck, the combination, with the downwardly-curved longitudinal braces and supports F F, the lowermost portions of which rest on the ground, of the semicircular curved transverse brace and support I, formed of a single piece, and having its lower ends secured to the supports F F at a point in rear of where the latter touch the ground, and continued downwardly to form auxiliary supports or legs K K, touching the ground, as set forth.

2. In a wheelbarrow or truck, the combination, with the braces or supports F F, of the semicircular curved forwardly-inclined transverse brace and support I, formed of a single piece, and having its central portion, L, secured to the body of the wheelbarrow or truck on its under side, and at or near the center thereof, and its lower ends to the braces F F, from whence they are continued downwardly to form legs or supports K K, resting on the ground, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE M. SHUMAKER.

Witnesses:
WM. I. GRAHAM,
THOS. M. BOWMAN.

(No Model.) 2 Sheets—Sheet 1.

J. ANNIN.

WHEELBARROW.

No. 355,245. Patented Dec. 28, 1886.

fig. 1.

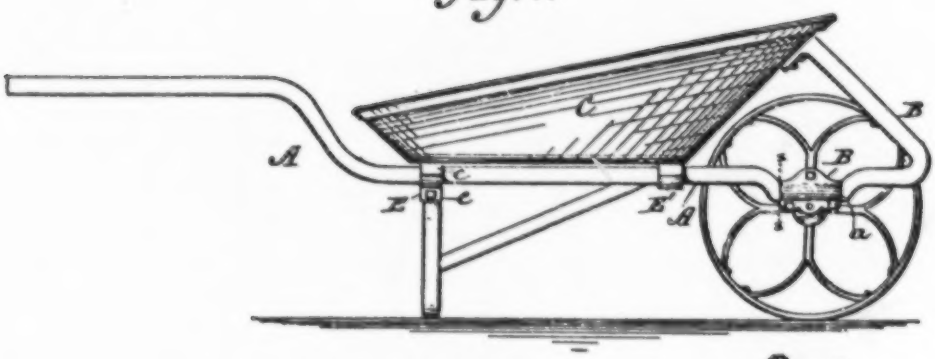
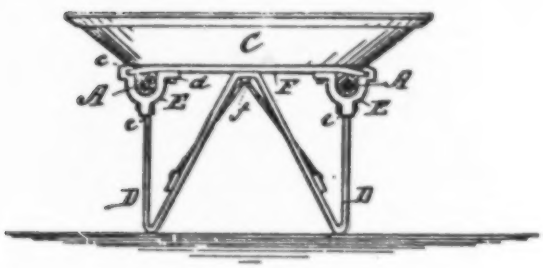


fig. 2.



WITNESSES:
Harrison B Brown
Amos W. Clark

INVENTOR:
Joseph Annin
BY Munn & Co.
ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

J. ANNIN.

WHEELBARROW.

No. 355,245. Patented Dec. 28, 1886.

Fig. 3.

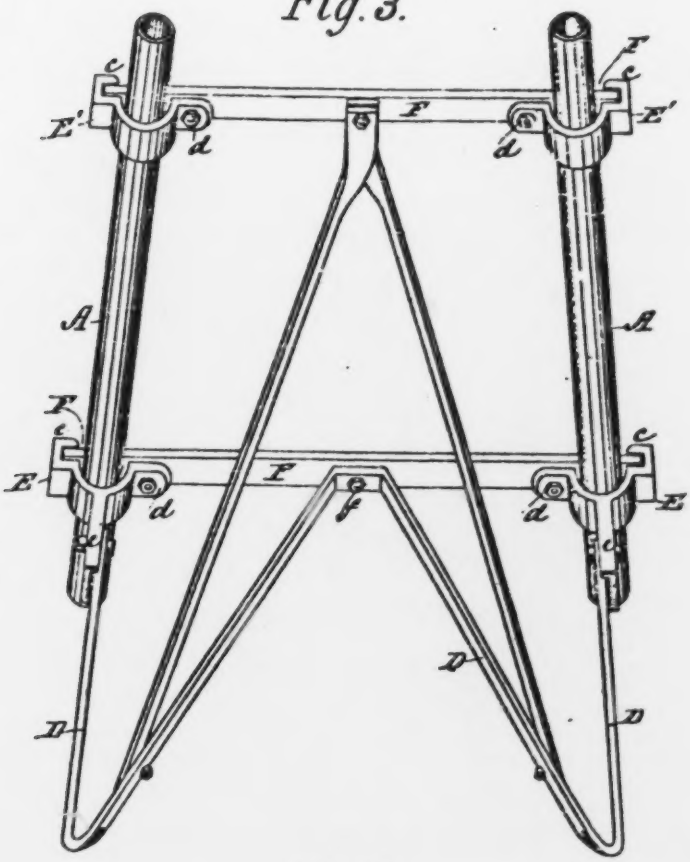


Fig. 6.

Fig. 4.

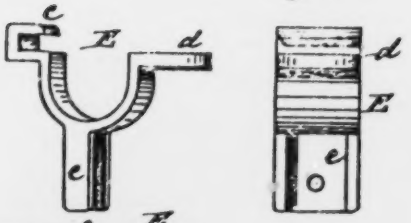
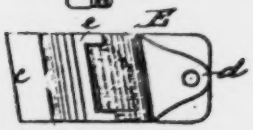


Fig. 7.

Fig. 5.



WITNESSES

Wm. A. Lowe

Amos W. Hart

INVENTOR

Joseph Annin

By Munn & Co

Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH ANNIN, OF BROOKLYN, NEW YORK.

WHEELBARROW.

SPECIFICATION forming part of Letters Patent No. 355,245, dated December 28, 1886.

Application filed April 13, 1885. Serial No. 162,354. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ANNIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Wheelbarrows, of which the following is a description.

My invention is an improvement in the class of metallic wheelbarrows; and it consists in certain novel features of construction and combination of parts, to wit: the handles and wheel-bearings, the legs, and devices for attaching both handles and legs to the body of the barrow.

In the accompanying drawings, forming part of this invention, Figure 1 is a side view of my improved wheelbarrow. Fig. 2 is a cross-section showing the main portion of the barrow in end view. Fig. 3 is a perspective view showing a portion of the handles and other parts constituting the frame of the barrow inverted; Figs. 4, 5, 6, detail views of the front clip detached. Fig. 7 is a perspective view of the rear clip.

An important feature of my invention is the construction or form of the rear portions of the handles A A. By referring to Fig. 1 it will be seen that the said handles A A have a downward bend at *a*, where the wheel-bearings B B are attached. In other words, the handles are bent downward at a point between their rear end and the body of the barrow, and the said bearings are attached to the bend. The principal advantages of this construction are, first, that the said bearings B B are prevented from shifting or moving along the handles, and thereby getting out of place, as they tend to do when the handles are made straight instead of curved, as shown; second, that the axis of the wheel is removed downward farther from the body C of the barrow, so that not only a larger wheel than usual may be employed, but it is placed farther back under the load, so that lifting and propulsion of the barrow are made much easier than would be otherwise practicable.

Various forms of wheel-bearings B may be used; but I employ one that is in the form of a clamp, since it may be readily attached and detached as occasion requires, and avoids weakening the handles by the old method of bolting through them.

The special clamp-bearing shown in Fig. 1 is not my invention; but an application will be shortly made for it and the invention duly assigned to me.

Another feature of my invention is the means for attaching the handles B to the body C of the barrow. These means consist of clips E E′ and bars F. The latter are arranged parallel and transversely across the bottom of the barrow C, with their ends projecting more or less to adapt them to engage with the claws *c*, formed on one end of said clips E E′. The body of the clip is of semi-circular form to adapt them to receive the handles A, and a horizontal perforated flange, *d*, is formed on one end to receive the bolts that attach the clips to the body C. In the case of the front clips, E, Figs. 4, 5, 6, they are provided with vertical pendent portion *e*, having a socket to receive the legs D.

The clips E E′ are applied as shown in Figs. 2 and 3—that is to say, the claws *c* receive or embrace the ends of the transverse bars F, and the bolts passing through the flanges *d* also pass through said bars, and thus secure both parts to the body C of the barrow. By this arrangement, also, the handles A are clamped tightly between the bars and clips, as shown. It will be noted that the bars F support the body C of the barrow on the handles A, and of course other means than the clips may be employed to attach these parts together.

The leg D is double angular or in the form of the letter W, and its ends are fitted closely in the sockets of the pendent clip-flanges *e*, its lower angles forming the feet that rest on the ground. The middle part is attached by a bolt, *f*, to the body C. The rectangular socket *e* of the clip is open on the inner side, and each end of the leg D fits snugly therein and has a firm bearing on the body of the clip. Either a bolt or a rivet may be used to secure the leg to the clip.

It will be apparent without further statement that this construction and combination of parts not only forms a very firm and rigid attachment of the leg and handles to the body

of the barrow, but enables them to be easily and quickly detached, when required, for the purpose of packing and shipping. The form of the leg also secures the desirable combination of strength, lightness, and cheapness. It is provided with a brace, as shown.

The handles A A are constructed of wrought-iron tubes, and the clips and leg are preferably made of malleable cast-iron.

What I claim is—

1. The combination, with the wheelbarrow-handles having the downward bend *a*, forming opposite angles or shoulders, as shown, of the wheel bearing clamps which are secured around such bent portions and thus prevented from endwise movement, as shown and described.

2. The clip for attaching the handles to the body of the wheelbarrow, the same having a curve or cavity adapted to receive a handle and a lateral perforated flange and claw, as shown and described.

3. The combination, with the handles and the wheelbarrow-body having lateral projections, of clips which embrace the handles and receive said projections, and bolts for attaching the clips to said body, substantially as shown and described.

4. The combination of the clips with the handles, the wheelbarrow-body, and bars attached to the latter and projecting laterally, substantially as shown and described.

5. The clips having a pendent flange with an open sided socket, the leg inserted therein, and a bolt passing through both flange and leg, all combined as described.

JOSEPH ANNIN.

Witnesses:
AMOS W. HART,
CHAS. A. PETTIT.

(No Model.)

B. C. McCABE.

WHEELBARROW.

No. 562,139. Patented June 16, 1896.

Fig. 1.

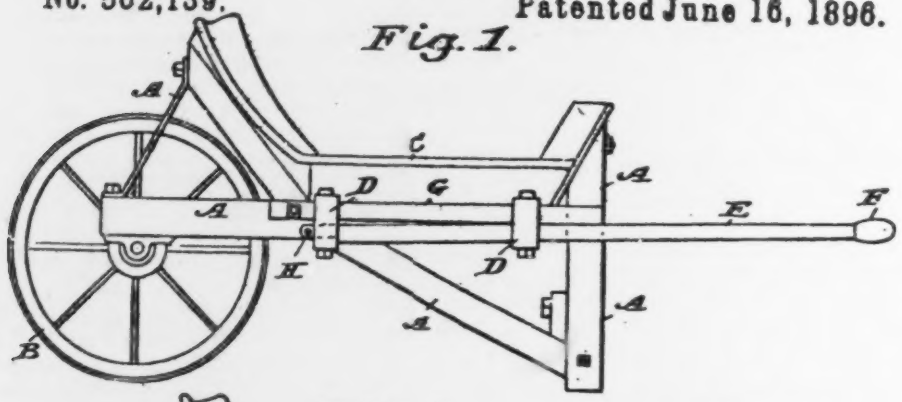


Fig. 2.

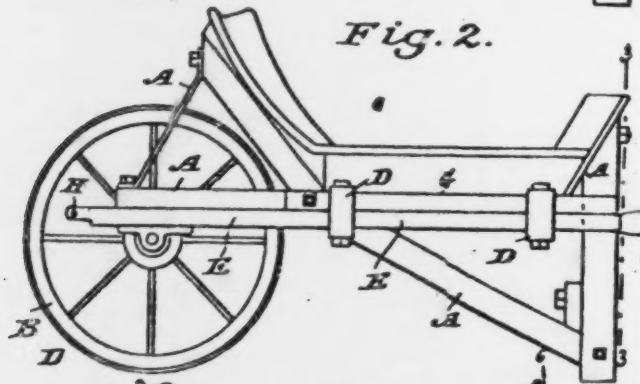


Fig. 3.

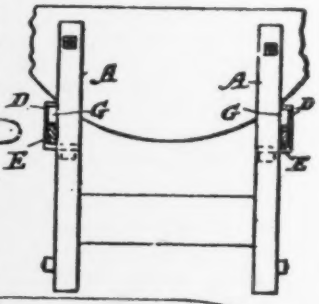


Fig. 5.

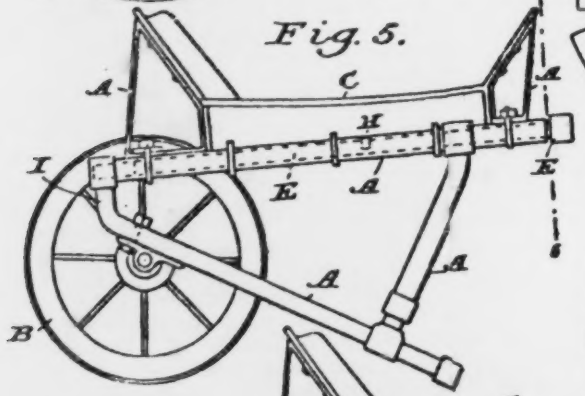
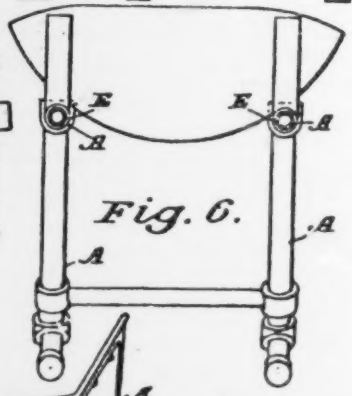


Fig. 6.



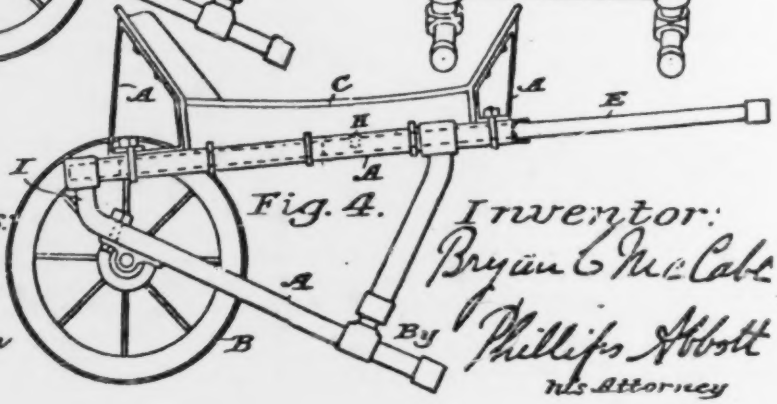


Fig. 4.

Witnesses:
E. B. Bolton
A. B. Morrison

Inventor:
Bryan C. McCabe
By Phillips Abbott
His Attorney

UNITED STATES PATENT OFFICE.

BRYAN C. McCABE, OF NEW YORK, N. Y.

WHEELBARROW.

SPECIFICATION forming part of Letters Patent No. 562,139, dated June 16, 1896.

Application filed February 15, 1896. Serial No. 579,433. (No model.)

To all whom it may concern:

Be it known that I, BRYAN C. McCABE, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Wheelbarrows, of which the following is a specification.

My invention relates to improvements in wheelbarrows; and it consists in the construction and arrangement of the parts, as hereinafter described and illustrated.

In the erection of buildings, particularly in the cities, a construction-elevator is at the present time almost invariably employed, and the workmen frequently find it convenient to load wheelbarrows with the building material, and then to wheel them upon the elevator by which they are lifted to the floor where the work is in progress, and then the load still upon the wheelbarrow is trundled off to the desired part of the building. It frequently happens that the space through which the elevator can pass is contracted, sometimes in one direction and sometimes in all directions. Consequently great care is necessary in locating the wheelbarrow or barrows upon the elevator, that no part of it projects beyond the edge of the elevator, otherwise such projecting parts may come in contact with a beam or other obstruction, resulting in an upset, which always occasions loss and sometimes serious accident to the workmen. These occurrences arise more particularly because of carelessness on the part of the men who leave the handles of the barrow projecting beyond the edge of the elevator, and sometimes the forward or wheel end of the barrow is left projecting.

By my invention I provide means whereby the barrow as a structure may be materially shortened and still when in use be as serviceable as an ordinary one, and I not only obviate the dangers above stated, but also secure an important advantage in the shipment of the barrows from the factory to the place of use or sale. As now constructed they are a bulky article, and a considerable part of their cost is frequently occasioned by the transportation bill. Under my improvement they are made much more compact than heretofore.

In the drawings hereof, Figure 1 illustrates my invention as applied to a wooden-frame barrow, the handles being extended. Fig. 2 illustrates the same as shown in Fig. 1, the handles being retracted. Fig. 3 illustrates a rear view of the barrow shown in Figs. 1 and 2. Fig. 4 illustrates the invention as applied to a metal-frame barrow, with the handles projecting. Fig. 5 illustrates the same as Fig. 4, the handles being retracted. Fig. 6 illustrates a rear view of the kind of barrow shown in Figs. 4 and 5.

Referring first to Figs. 1 and 2, A is the ordinary frame of a wooden barrow; B, the wheel; C, the hopper or body. The frame does not extend rearwardly, constituting a handle as heretofore. On the contrary it is cut off adjacent to the rear end of the body, as shown, and flattened or rounded metal straps or bands D D are suitably fastened to the side frames having a lateral projection therefrom of, say, half an inch or thereabout.

E represents extendible handles, there being, of course, one on each side of the barrow. In the present instance they are represented as being made of iron or steel, preferably an inch and a half wide, or thereabout, and about a quarter inch thick, set edgewise, and enlarged at their ends into a handle F of suitable shape. These are arranged to slide through the straps D D, and inasmuch as they are not so wide as the side piece of the frame A, I fill in the upper portion of the straps by a strip of board or other suitable material, (shown at G,) which is fastened to the side frame A in any preferred manner. If the handle-pieces are made of wood instead of metal, then the straps D should have greater lateral projection from the sides of the barrow-frame, and the wooden handles will entirely fill them, so that the strips G will be omitted.

H is a pin which projects laterally from the end of the handles E, which prevents them from being withdrawn too far, by striking against the most forward strap D.

In Figs. 4 and 5 I show a barrow having a metal frame. The parts are marked the same as before, but in this case the frame is made of iron pipe and the handles E are likewise of iron pipe of a smaller diameter, so that they slide within or telescope the side bars of the main frame. A stop to prevent the handles from being drawn too far outwardly may

be provided in any suitable manner—as, for example, by a screw H, threaded through the side bars of the main frame, which enters and works through a slot made in the extendible handles E, or any other suitable device may be adopted. I also reduce the forward projection of the wheel by bending the forward end of the ground-brace upon which the wheel-bearings are placed sharply upward at their forward ends, as shown at I in Figs. 3 and 4. This has the effect of bringing the wheel farther under the barrow, thus shortening the structure as a whole. This construction may be employed in the case of wooden frames, as well as metallic-frame barrows, but on the score of appearance and convenience of manufacture, expense, &c., is rather more applicable to metal-frame barrows.

The operation is obvious from what has already been stated. The workman is instructed that he is to properly locate his barrow upon the elevator, and before leaving it he must shove both of the handles fully in. This is a simple physical act, thoroughly comprehensible by the most ignorant workman, and it results in shortening the barrow so markedly that accidents are avoided, and, also, it is possible to use barrows for the purposes stated, when they embody my invention, in many cases where otherwise it would be impossible so to do.

It will be particularly observed that in both forms of my invention the handle part is straight, conforming to the side bars of the main frame of the barrow, so that, when desiring to shorten it, the extendible handles may be shoved forwardly to practically their whole length. Consequently the resulting structure is practically no longer than the length of the body, plus the slight projection of the wheel. If the handles were curved, this result could not be obtained.

I claim—

1. A wheelbarrow having straight tubular side bars forming part of the main frame, and straight extendible handles which telescope the said tubular bars, for the purposes set forth.

2. A wheelbarrow having straight side bars for the upper part of the main frame, straight, extendible handles, movably connected to said bars, and a wheel-supporting frame brought under the barrow by curving its front portions upwardly, for the purposes set forth.

3. A wheelbarrow, the side bars of the main frame of which are tubular and straight, straight, extendible handles which slide within the said tubular bars, and means to limit the outward movement of the said extendible handles, for the purposes set forth.

4. A wheelbarrow, the side bars of the main frame of which are straight and tubular, extendible handles also straight, which slide within the said tubular bars, means to limit the outward movement of the extendible handles, and a wheel-supporting frame, shortened forwardly by bending the forward ends thereof upwardly, for the purposes set forth.

5. A wheelbarrow, the upper part of the frame whereof is made of straight bars, which stop rearwardly substantially on the line of the body of the barrow, extendible handles, also straight, and means to movably connect said handles to said bars, for the purposes set forth.

6. A wheelbarrow, the upper part of the frame whereof is made of straight, tubular bars, which stop rearwardly substantially on the line of the body of the barrow, extendible handles also straight, which telescope said tubular bars, and means to limit the outer movement of the handles, for the purposes set forth.

7. A wheelbarrow, the upper part of the frame whereof is made of straight bars, which stop rearwardly substantially on the line of the body of the barrow, extendible handles also straight, and means to movably connect said handles to said bars, the front end of the lower part of the frame of the barrow being shortened by turning the same upwardly, for the purposes set forth.

Signed at New York, in the county of New York and State of York, this 11th day of February, A. D. 1896.

BRYAN C. McCABE.

Witnesses:

PHILLIPS ABBOTT,

A. B. MORRISON.

No. 686,298. Patented Nov. 12, 1901.

O. HOFFMANN.

WHEELBARROW.

(Application filed Apr. 26, 1901.)

(No Model.)

Fig. 1.

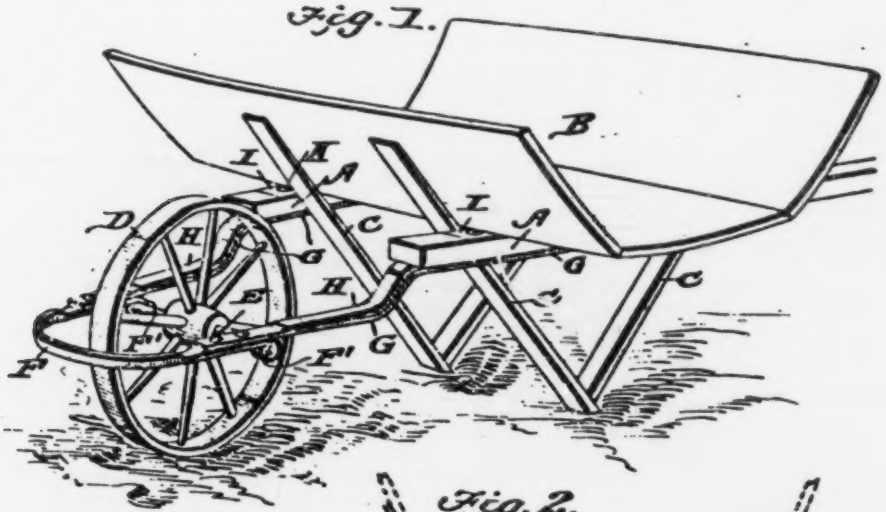


Fig. 2.

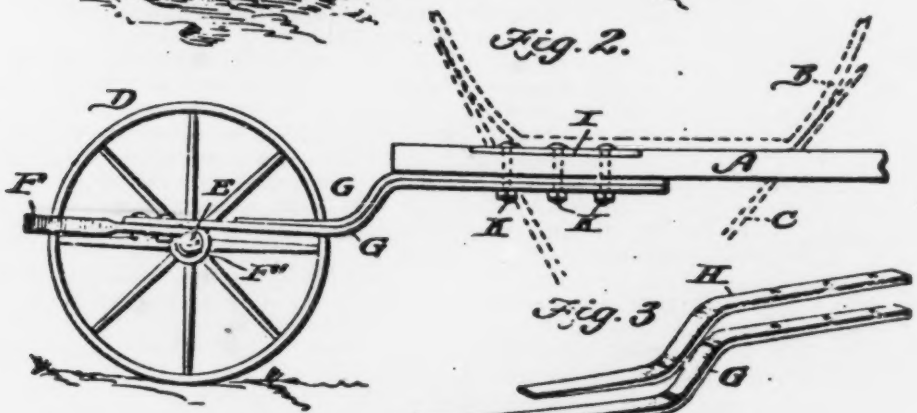
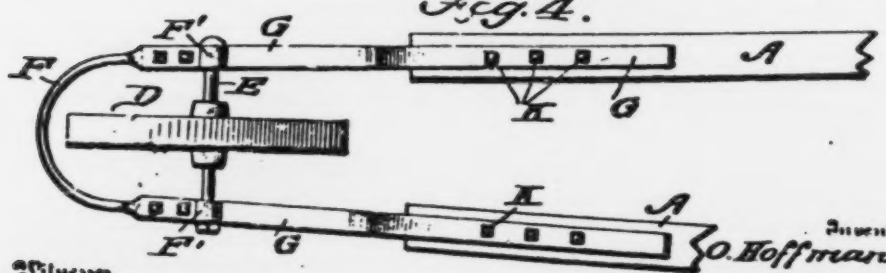


Fig. 3

Fig. 4.



Witnesses
Wm. Bloundel
Clarence Shaw

Inventor
O. Hoffmann
by Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

OTTO HOFFMANN, OF PORTLAND, OREGON.

WHEELBARROW.

SPECIFICATION forming part of Letters Patent No. 686,298, dated November 12, 1901.

Application filed April 20, 1901. Serial No. 56,725. (No model.)

To all whom it may concern:

Be it known that I, OTTO HOFFMANN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Wheelbarrow-Spring, of which the following is a specification.

This invention relates generally to wheelbarrows, and more particularly to an improved means of connecting the wheel to the frame, the object of the invention being to provide a simple and efficient spring attachment by means of which the jar incident to traveling over a rough road will be greatly avoided.

Another object is to provide an exceedingly cheap and simple attachment by means of which the various parts of the wheelbarrow can be quickly and easily assembled.

With these objects in view the invention consists in the peculiar construction of the various parts and their novel combination and arrangement, all of which will be hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a perspective view of a wheelbarrow constructed in accordance with my invention. Fig. 2 is a side view showing the spring attachment. Fig. 3 is a detail view showing the spring connections detached; and Fig. 4 is a bottom plan view of the spring-frame, showing the manner of connecting the same to the wooden beams.

In carrying out my invention I employ the wooden beams A, which are tapered at their rear ends to provide suitable handles. The body of the barrow proper, B, is supported by these beams through the medium of the inclined supports or standards C, which are securely fastened to the side beams A.

The wheel D is mounted upon an axle E, which is journaled in the ends of a bow-shaped frame F, the ends of said frame being carried around, as shown at F', to provide bearings for the ends of the wheel-axle. This bow-shaped frame F extends around in front of the wheel and acts as a guard to protect said wheel. The frame F, in which the wheel is journaled, is connected to the side beams A by means of a spring-bar G, which is secured to the side beam A upon the under side adjacent to the forward end and projects horizontally some distance beyond said end and is then curved downwardly, the extreme end of the said bar being fastened to the side member of the frame F at a point in advance of the wheel-axle, and it will of course be understood that there are two such bars G, one extending from each side beam A to each side member of the frame F.

Each spring-bar G is reinforced by means of a flat leaf-spring H, which is arranged above the bar G and is secured at its rear end to the under side of the beam A and by means of the same bolts which secure the side bar G. This side bar H extends substantially parallel with the bar G, but terminates a short distance to the rear of the wheel-axle. The purpose of this supplemental spring H is to reinforce the spring-bar G, and by being interposed between the said bar and the beam A it will better serve to take up the jar incidental to the passage over rough ground.

A washer-plate I is set into the upper surface of each side beam and through which the fastening-bolts K pass, said washer-plate serving to prevent the bolts working loose.

By journaling the wheel in the bow-shaped frame and connecting said frame to the wheelbarrow-frame by means of the spring-bar, which is reinforced by a supplemental spring, it will be readily understood that the jar incidental to the travel over rough ground will be greatly avoided, and by having the wheel arranged in a bow-shaped frame the forward portion of said frame will serve as a guard to protect the said wheel.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with the side beams, of the wheel, the bow-shaped frame in which the wheel is journaled, the spring side bars connecting the bow-shaped frame to the side beams, and the reinforcing-spring arranged upon the spring-bar and terminating at a point to the rear of the wheel-axle, substantially as shown and described.

2. The combination with the side beams, of the spring-bars attached to the under sides

thereof and projecting forwardly beyond the ends of the side beams, the reinforcing-springs arranged upon the spring-bars, the bow-shaped frame having its ends formed into bearings, the axle journaled therein, and the wheel mounted upon the axle, the forward ends of the spring-bars being connected to the bow-shaped frame in advance of the wheel-axle, substantially as shown and described.

OTTO HOFFMANN.

Witnesses:
M. MATCOVICH,
FRANK S. GRANT.

No. 888,055. PATENTED MAY 19, 1908.

C. A. BAKER.

WHEELBARROW CLIP.

APPLICATION FILED JUNE 8, 1907.

FIG. 1.

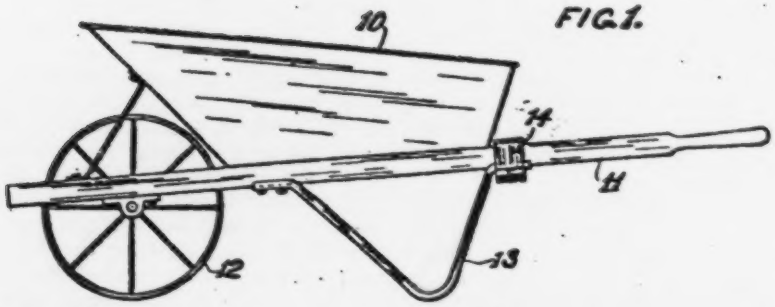


FIG. 2.

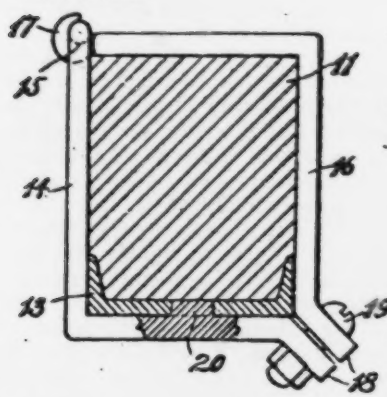


FIG. 3.

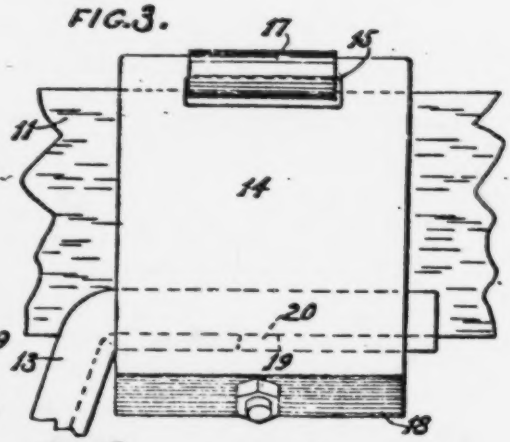


FIG. 4.

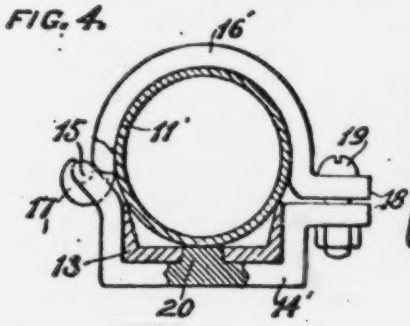
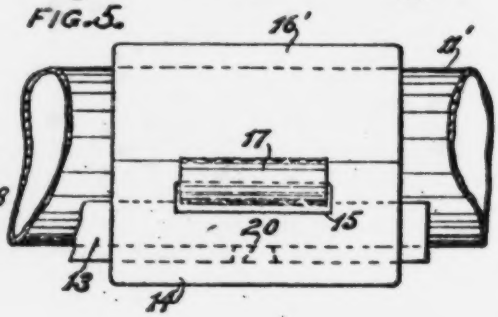


FIG. 5.



WITNESSES.

H. B. Thurman

Anna E. Schmidt

INVENTOR.

Charles A. Baker.

By Benedict, Morsell & Caldwell.

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES A. BAKER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO STERLING WHEELBARROW COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

WHEELBARROW-CLIP.

No. 888,055. Specification of Letters Patent. Patented May 19, 1908.

Application filed June 3, 1907. Serial No. 376,927.

To all whom it may concern:

Be it known that I, CHARLES A. BAKER, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Wheelbarrow-Clips, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a wheelbarrow with a clip for fastening the leg member to the handle member without weakening the latter.

Heretofore wheelbarrows have usually been made with leg members secured to the handle members by means of bolts necessitating openings through the handle member which serve to weaken the same at points where considerable stress is received in use, the result being that the handle members were frequently broken at these points.

This invention comprises a clip for wheelbarrows which will tightly clamp upon the handle members by surrounding the same and thereby hold the leg members or other parts in place without weakening the handle members.

With the above and other objects in view the invention consists in the wheelbarrow clip herein claimed and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the several views; Figure 1 is a side elevation of a wheelbarrow provided with clips in accordance with this invention; Fig. 2 is a sectional elevation of the wheelbarrow clip; Fig. 3 is a side elevation thereof; Fig. 4 is a view similar to Fig. 2 of a modified form of this invention; and, Fig. 5 is a side elevation thereof.

In these drawings 10 represents a wheelbarrow body carried by the usual handle members 11 which are mounted on the wheel 12, the leg member 13 being secured to the handle members by means of the wheelbarrow clip of this invention. This wheelbarrow clip, as shown in Figs. 1, 2 and 3 for a wooden handle, comprises an angular member 14, preferably of cast metal, though it may be of strap sheet metal, and adapted to fit against the side of the handle member and beneath the channel iron leg member with a slotted eye portion 15 extending above the top of the handle member. A corresponding angular member 16 has a bent tongue or hook 17 engaging the eye 15 and extending over the top of the handle member and down the other side thereof. The free ends of the two members 14 and 16 are located at the diagonally opposite corner of the handle member from the hook and eye engagement thereof and extend in planes parallel to such diagonal to form ears 18 through which a clamping bolt 19 passes for tightly clamping the members together. The channel iron leg member 13 contains the opening which has heretofore been used for the passage of the bolt clamping said channel iron leg member to the handle member, but now the said opening is designed to receive a lug 20 projecting upwardly from the lower portion of angle member 14.

In applying the clip of this invention to secure the leg member in place on the handle member no boring of the handle member is required, but the clips are placed in the desired positions thereon with the angle iron leg members engaged by the lugs 20 entering the openings referred to and the clamping bolts 19 are placed through the ears and tightened therein to tightly clamp the parts together, the leg members being rigidly held in place on the handle members thereby.

When tubular metal handle members are provided on the wheelbarrow, the clip of this invention is modified in construction as shown in Figs. 4 and 5, wherein the channel iron leg member 13 embraces the under part of the tubular handle member 11′ and the upper member 16′ is curved to fit the tubular handle member 11′ and the lower member 14′ is of a U-shape to receive the channel iron leg member 13, the hinge connection therebetween being located on one side of the handle member and the clamping ears 18 being located on the other side thereof. The clamping bolt 19 is provided as before to clamp the parts together and the lug 20 is also provided for engaging the opening of the leg member.

Besides securely fastening the leg member to the handle member without weakening the latter the clip of this invention is quickly and easily detachable for purposes of repair, and by means of the lug 20 fitting in the opening of the channel iron leg member there is no possibility of its slipping out of place.

What I claim as my invention is;

1. A wheelbarrow clip, comprising a pair of members hinged together and surrounding

the handle member and the leg member of the wheelbarrow, ears projecting from said clip members opposite the hinge connection, and a clamping bolt connecting the ears for clamping the members tightly in place.

2. A wheelbarrow clip, comprising a pair of members hinged together and surrounding the handle member and the leg member of the wheelbarrow, a lug on one of the clip members entering an opening in the leg member, ears on the clip members opposite the hinge connection thereof, and a clamping bolt connecting the ears for tightly clamping the clip in place.

3. A wheelbarrow clip, comprising a pair of clip members surrounding the handle member and the leg member of the wheelbarrow, a hook formed on the end of one member and engaging an eye formed in the end of the other member, ears on the other ends of the clip members opposite the hook and eye connection thereof, and a clamping bolt passing through the ears for clamping the clip in place.

4. A wheelbarrow clip, comprising a pair of angular members surrounding the handle member and the leg member of the wheelbarrow, a hinge connection between the clip members at one end thereof located at an edge of the handle member, ears at the other end of the clip members at the diagonally opposite edge of the handle member, and a clamping bolt passing through the ears for clamping the clip in place.

In testimony whereof, I affix my signature, in presence of two witnesses.

CHARLES A. BAKER.

Witnesses:

A. L. MORSELL,

ALMA A. KLUG.

R. E. BOOTH.

WHEELBARROW.

APPLICATION FILED MAY 24, 1916.

1,242,418. Patented Oct. 9, 1917.

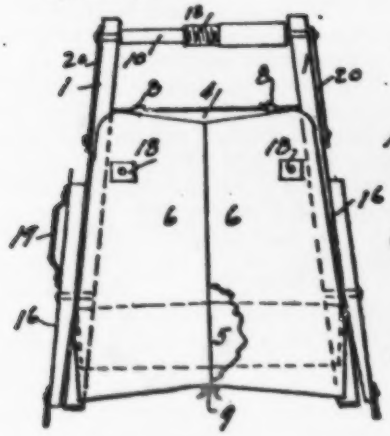


Fig. 1.

Fig. 2.

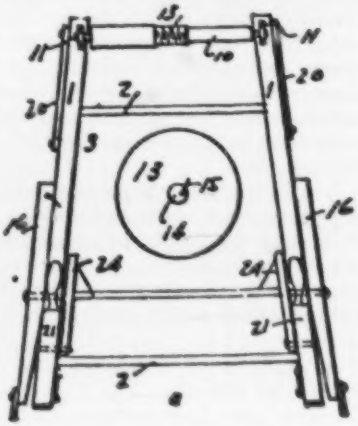


Fig. 3.

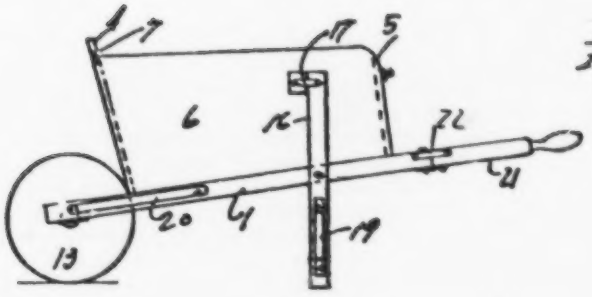


Fig. 4.

Fig. 5.

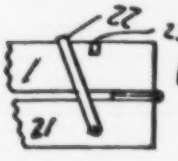


Fig. 6.

WITNESSES:

INVENTOR

Ronald E. Booth

BY

ATTORNEY

UNITED STATES PATENT OFFICE.

RONALD E. BOOTH, OF SEATTLE, WASHINGTON.

WHEELBARROW.

1,242,418. Specification of Letters Patent. Patented Oct. 9, 1917.

Application filed May 24, 1916. Serial No. 99,648.

To all whom it may concern:

Be it known that I, RONALD E. BOOTH, a citizen of Great Britain, and a resident of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Wheelbarrows.

This invention relates to wheel barrows, and has for its principal object to provide an improved and novel form of knock-down wheel barrow, the individual members of which are foldable with respect to one another, so as to form when in a folded position a compact, flat and easily carried package. Another object is to provide an improved form of extension handle construction. While my wheel barrow is adaptable for almost any purposes to which a wheel barrow is adaptable, yet I have in mind more particularly the lighter or toy wheel barrows which children use at the beaches and summer resorts. In this connection it is advantageous to have a wheel barrow which is foldable, takes but very little room, and is easily carried, which may be taken upon railway coaches, automobiles, buggies and the like when traveling.

In the drawings Figure 1 is a top plan view of my device shown in a folded position. Fig. 2 is a similar side elevation. Fig. 3 is a bottom elevation of same. Fig. 4 is a side elevation of my wheel barrow shown in position for use. Fig. 5 is an enlarged detail view of my improved extension handle device. Fig. 6 is a similar view of the same shown in a folded position. Referring more particularly to the drawings numeral 1 indicates side members which are tied together by strut members 2. A main bottom member 3 is secured to the side members 1 and strut members 2. A front end gate 4, and a rear end gate 5 are hinged to floor member 3. The end gate members are adapted to fold down upon the body member 3, and to lie flat thereon, when the wheel barrow is folded or knocked down. Side boards 6 are removably attachable to the frame members 1 and to the end gate members 4, and 5 by means of dowels and small hooks 7. When in the knocked-down position side boards 6 lie flat upon the top of the folded end gates, as clearly shown in Figs. 1 and 2, and are secured in said position by means of hooks 8 at the front, and 9 at the rear. An axle 10 is secured to members 1 by means of clips 11, which are turnable upon a pivot, so that the axle is easily releasable from engagement with members 1. Axle 10 is threaded as at 13 near its central portion, so as to receive the wheel 13ª which screws upon the said axle, and which may be removed by simply unscrewing it from the said axle. When in the knocked-down or packed position, the wheel 13ª is retained by a peg 14, and hook 15 upon the underside of floor board 3. Legs 16 are pivoted to the members 1, one on either side of the wheel barrow. In a folded position the legs 16 are parallel and adjacent to the members 1. When the wheel barrow is in use the legs 16 are swung at approximately right angles to the members 1 and the lower ends of said legs rest upon the ground while the upper ends extend along the outside of side-boards 6, to which they are secured by means of clips 17, which engage lugs 18. Handle 19 is secured to one of the legs 16, and is used for convenience in carrying the wheelbarrow when in the knock-down form. When it is not desired to use side-boards 6 in connection with the wheel barrow, the front end gate 4 is secured in position by means of straps 20, the one end of each of which is secured to the member 1, and the other end of which is adapted to engage the hook 7. Extension handles 21 are hinged to the rear end of members 1, and are foldable therewith, as shown in Figs. 1, 2 and 3. When in the extended position each of handles 21 is held against collapsing by means of a strap yoke 22, which is pivoted to the extension handle 21 at the end and a loop portion of which engages a notch 23 in the member 1. When in the folded position the yoke 22 swings up and over member 21, thereby holding the member 21 and 1 in a close or folded position with respect to each other. This is clearly shown in Fig. 6. When the side boards are not used in connection with the wheel barrow the legs 16 are left in the folded position, that is parallel and adjacent to the members 1. Auxiliary legs 24 are pivoted on the inner side of members 1, and fold in against the under side of bottom member 3, and adjacent to the inner side of the side members 1. The legs 24 may be extended and used to rest the wheel barrow on when the side boards are not in use in connection with the wheel barrow. While applicant is aware that wheel barrows of many forms have

heretofore been used and patented, yet he believes that wheel barrows of the form shown and in which the novel idea of making them knocked-down, and the particular method of assembling to be new.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention, and I therefore desire to avoid being limited to the exact claims.

Having described my invention, what I claim as new and desire to protect by Letters Patent, is—

1. In a collapsible wheel barrow including a flat body frame and a wheel removably secured onto a wheel shaft, the combination of extensible hinged handles and means for locking said extension handles in an open or closing position, said means including a yoke pivoted to the extension portion of said handle and adapted to engage a notch in the top of the permanent portion of said handle when in an open position.

2. In a collapsible wheel barrow which includes a rigid body frame, a combination of a centrally threaded wheel shaft removably mounted on said frame, a threaded wheel removably secured on to said shaft, legs centrally pivoted to said frame and normally extending above and below said frame, whereby the upper portion forms a support for the sideboards, auxiliary legs which are foldable beneath said body, extensible handles hinged to said body and foldable beneath said body, and means for locking said handles in an open or closed position, said means including yokes pivoted to the said handles and adapted to engage notches in the said frame when the said handles are in an extended position, and which are adapted to engage the top of the frame when the handles are in a folded position.

RONALD E. BOOTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Nov. 3, 1925. 1,559,646

R. R. ROEMER

WHEELBARROW

Filed May 14, 1923 2 Sheets-Sheet 1

Fig. 1.

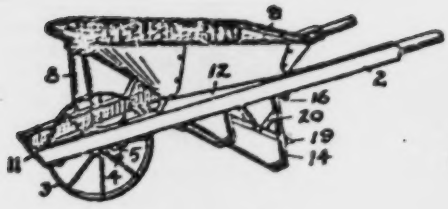


Fig. 2.

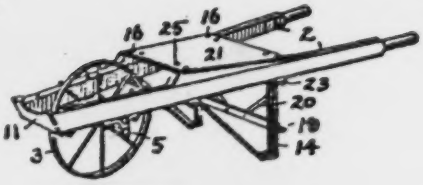
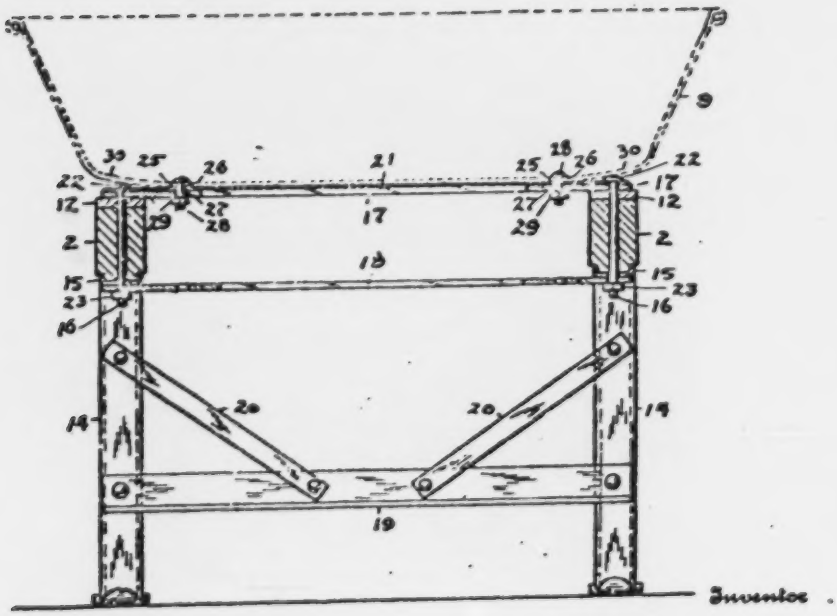


Fig. 3.

Fig. 4.

Fig. 5.



Inventor

R. R. ROEMER

By Fisher, Mair & Wilcox

Attorneys

Nov. 3, 1925. 1,559,646

R. R. ROEMER

WHEELBARROW

Filed May 14, 1923 2 Sheets-Sheet 2

Fig. 6

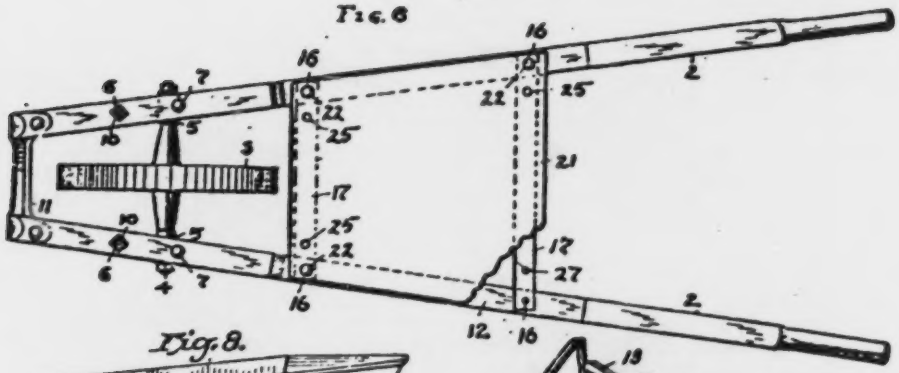


Fig. 8.

Fig. 9.

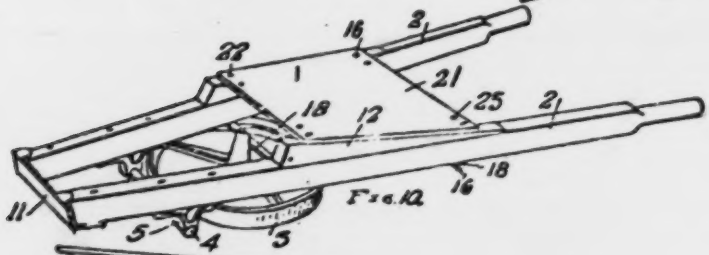


Fig. 10.

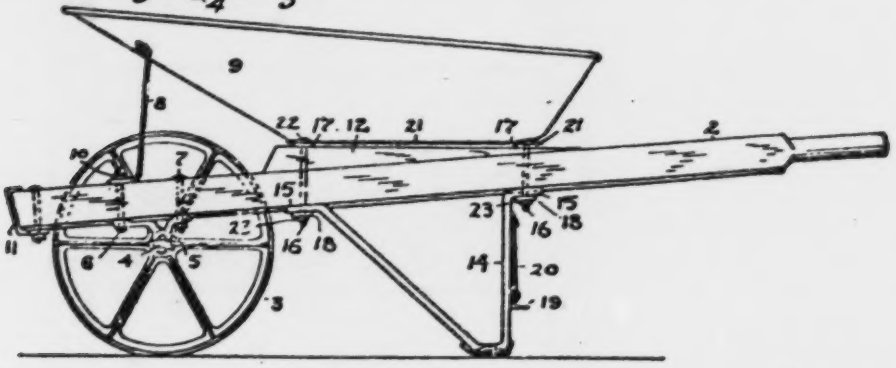


Fig. 7.

Inventor

R. R. ROEMER

By Fuller, Mossler & Talbot

Attorneys

Patented Nov. 3, 1925 1,559,646

UNITED STATES PATENT OFFICE.

RALPH R. ROEMER, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND WHEELBARROW AND MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

WHEELBARROW.

Application filed May 14, 1923. Serial No. 638,866.

To all whom it may concern:

Be it known that I, RALPH R. ROEMER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in a Wheelbarrow, of which the following is a specification.

My invention relates to an improvement in wheelbarrows, and my primary object is to provide a wheelbarrow in which the parts are particularly constructed and arranged to facilitate their shipment and storage, to expedite their assembly; and to promote inter-changeability of parts. A further general object is to effect absolute rigidity of union between the parts when the parts are assembled, and to produce a wheelbarrow of extremely rugged construction although of a knock-down type and easily separable. More specifically stated my conception involves the making of a wheelbarrow in such a way that the manufacturer may assemble some of the parts and ship these as units capable of being conveniently handled and compactly nested or packed, and which units when received by the consignee will be in such form that separation and disassembly thereof will not be again required in order to set up and make a complete wheelbarrow. On the contrary the idea is to provide the consignee with a minimum number of pre-assembled units to enable him to quickly and conveniently put these pre-assembled units together without the service of trained or skilled persons, thereby effecting a saving in shipping charges and time and labor and expense in assembling a complete wheelbarrow at points remote from the place of manufacture. This makes the present wheelbarrow especially attractive and of value for foreign or export trade and in meeting world competition in this common class of goods, and in this connection it should be understood that wheelbarrows in general are constructed on old and accepted lines, the present one included, except as hereinafter shown and described and more concisely pointed out in the claims.

In the annexed drawings, Fig. 1 is a perspective view of my improved wheelbarrow. Fig. 2 is a perspective view of the wheelbarrow with the tray removed. Figs. 3 and 4 are perspective views of two different forms of trays. Fig. 5 is an enlarged cross section of the wheelbarrow, showing a tray in dotted lines seated on a supplemental tray bottom. Fig. 6 is a plan view of the wheelbarrow without the tray, and Fig. 7 is a side elevation of the same wheelbarrow with a tray. Figs. 8 to 10, inclusive, are perspective views, illustrating the shipping units which enter into the making of a complete wheelbarrow.

Structurally considered, the wheelbarrow comprises either wood or metal handles 2 which are spread apart wider at their hand-grip ends than at the wheel 3 which is supported on an axle 4 held in bearings 5. These bearings have channeled flanges which are adapted to fit and seat snugly upon the rabbeted underside of the handles and separate bolts 6 and 7 of different length extend upwardly through the handles to secure the bearings in place. The longer front bolt 6 in each handle is also used to anchor a metal brace 8 to the handle for the sloping front end of the sheet-metal tray 9, the nut 10 for the bolt being at the upper end of the bolt to facilitate attachment and detachment of this brace. In an end dump barrow the handles are extended in front of the wheel and united together, and where wood handles are used, a cast-metal member 11 extends across and connects the front ends thereof, see Fig. 6. Separate wood tapering pieces 12 are also superposed upon the handles to level the tray horizontally, the normal slant of the handles being upwardly from the wheel to the hand-grips when the barrow is at rest on the legs 14. These legs are preferably made of channel iron having angularly-bent extremities 15 adapted to fit the rabbeted underside of the handles opposite the tapering pieces 12. Four bolts 16 extend through registering holes in the handles and their superposed pieces 12, and also through registering holes in the angular extremities 15 of the legs as well through two pairs of strap iron bracing members 17 and 18, respectively, extending transversely of the handles above and below the same as clearly shown in Fig. 5. The rear vertical portion of the legs are rigidly braced and connected by an angle iron 19 and inclined struts 20 riveted to the legs and to the angle iron.

I also prefer to span the space between the handles and to unite them more rigidly together by using a supplemental tray bottom 21 consisting of a flat quadrangular plate of

about sixteen gauge sheet metal, the four bolts 16 passing through round bolt holes in the four corners of this plate. The semi-round heads 22 of these four bolts seat upon the plate, and the nuts 23 for the bolts are detachably secured to the lower ends of the bolts against the bottom connecting straps 18. The wheelbarrow can be used in this form as a flat top barrow, but the primary purpose of the plate is to re-inforce the bottom of tray 9 when snugly seated and fastened thereon. Trays of different shape are used for different classes of work as partly exemplified in Figs. 3 and 4, but in nearly every instance the inclined sides of the tray overhangs the handles, and the trays are bulky and large, and subject to hard knocks and strains in dumping operations. Therefore, the tray must be securely fastened in place, and to accomplish that end and also permit the tray to be readily attached and detached, I provide the false bottom or flat plate 21 and the bottom of the tray itself with registering bolt openings 25 and 26, respectively, relatively near the corners thereof and spaced a short distance inward from the corner holes for the four bolts 16. The iron straps 17 and 18 are also provided with bolt openings 27 a short distance inwardly from the bolt holes in their ends so that four short bolts 28 may be inserted through the bottom of the tray, the false bottom plate 21, and thence through the openings 27 in the upper straps 17 where nuts 29 may be used to clamp the parts tightly together, as shown in Fig. 5.

However, a longer bolt may be used instead of a short bolt 28 to also engage the lower straps 18, thereby even more effectively clamping all the parts together. It should be noted in this connection that the bolts 28 and the openings therefor are vertically aligned contiguous or in close relation to the inner side faces of the handle bars 2 whereby a rigid and strong union is assured and the spreading strains and lateral blows may be favorably resisted. Furthermore, the nuts 29 for bolts 28 are accessible to permit the tray to be quickly and conveniently attached and detached without detaching the legs or disturbing their fastening bolts or the bracing straps or the false bottom plate 21. The tray may also be clamped tight and flat upon this bottom plate 21 because the tray is rounded or slants upwardly at 30 at each side of its bottom to clear the round heads of the leg bolts 16 which project above plate 21 and the handle bars, see Fig. 5.

A wheelbarrow constructed as herein described permits the manufacturer of the wheelbarrow to assemble and securely unite the following parts together as a single shipping unit, to wit, the handle bars 2, the tapering pieces 12, the straps 17 and 18, and the false tray bottom 19, using bolts 16; and these parts need not be separated when the consignee receives them but instead be used intact as pre-assembled to complete the wheelbarrow. In brief, this unit composed of the handle parts simplifies and expedites the putting together of the remaining wheelbarrow parts which are shipped separately because the trays are bulky and can be nested and shipped in quantities more compactly and satisfactorily in that way, and the leg units in the same way. The handle shipping unit also includes the bearings and shaft for the wheel, and by wiring the wheel separately to the handles and front cross straps as shown in Fig. 10, a very compact shipping package is obtained and valuable shipping space saved. Also, inasmuch as the trays are readily attached and detached from the handle assembly without separating the parts it is a simple matter to effect an interchange of different kinds of trays. Inter-changeability of the parts also permits a contractor to salvage and reconstruct old and worn wheelbarrows, of this kind, and especially to replace old trays with new ones.

Now, referring to Figs. 8 to 10, inclusive, the manufacturer fabricates and ships the handle assembly as a flat unit substantially as shown in Fig. 10. These flat units are capable of being piled compactly. The leg units shown in Fig. 9 and trays such as shown in Fig. 8 form separate shipping units capable of being nested compactly. Upon receipt of such units, the consignee may as a first step attach the tray to the handles upon the false tray bottom by means of the four bolts 28. This is easily accomplished without in any way separating, changing or displacing any of the parts in the handle shipping unit. The next step is to unwire the wheel and attach the front braces 8 to the tray and the handles. The tray and handle units are now rigidly tied together, and the whole structure is inverted to elevate the handles and bring their bottom sides into view and to an accessible working plane. The nuts 23 on the exposed ends of the bolts 16 are then removed, but these bolts can not drop nor be displaced because their heads rest upon the tray. The leg unit is now sleeved over the exposed ends of bolts 16 at the rabbeted sides of the handles and straps 18 slipped in place and fastened by the nuts 23. The wheel is then placed on its axle in the bearings or journals, and the wheelbarrow is now completed and ready for use. Manifestly, the operation is simple and may be accomplished very quickly with the aid of a single wrench.

What I claim, is:

1. A wheelbarrow, comprising spaced handles having a pair of legs and bracing straps at their bottom sides, separate connecting straps and a plate seated on said connecting straps at the upper side of said

handles, bolts extending through said plate, straps, legs and handles uniting them together, a tray removably seated upon said plate, and a separate set of bolts detachably securing said tray to said plate and straps at points relatively near said handles.

2. A wheelbarrow, comprising a pair of handles having tapering pieces superposed thereon, a pair of legs at the bottom of said handles below said pieces, cross connecting straps overlapping said legs and pieces and having bolt openings at their ends, bolts extending through all of said parts and uniting them rigidly together, a tray having bolt openings in its bottom, said straps having additional bolt-openings therein inwardly of the inner sides of and closely adjacent said handles and registering with the bolt openings in said tray, and bolts and nuts adapted to detachably clamp said tray to said straps.

In testimony whereof I affix my signature hereto.

RALPH R. ROEMER.

March 23, 1926. 1,578,213

I. R. SMITH

WHEELBARROW

Filed June 4, 1923 2 Sheets-Sheet 1

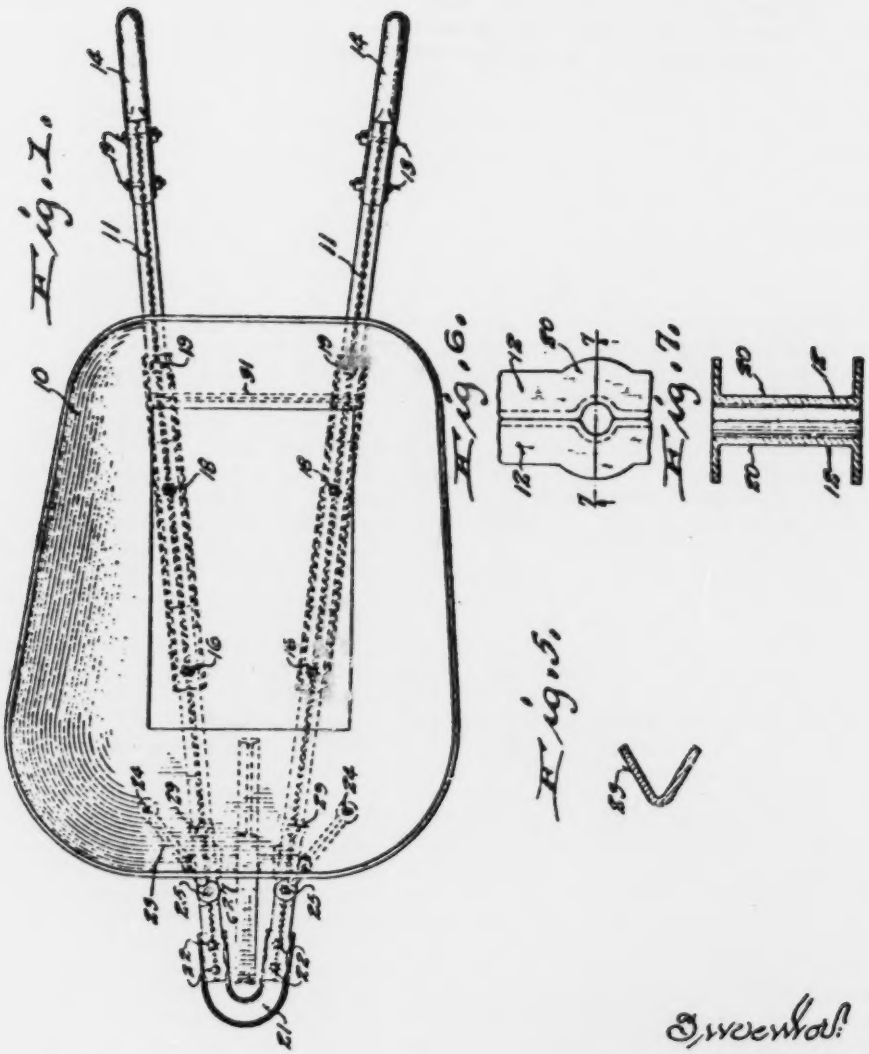


Fig. 1.

Fig. 6.

Fig. 7.

Fig. 5.

Inventor:
Irving R. Smith.
By Mowell, Kenny & Mowell
Attorneys.

March 23, 1926. 1,578,213

I. R. SMITH

WHEELBARROW

Filed June 4, 1923 2 Sheets-Sheet 2

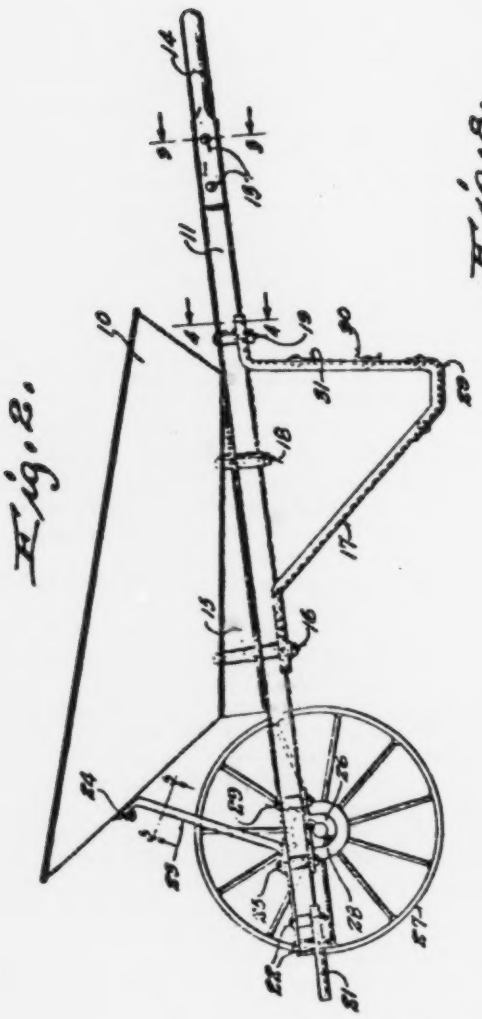


Fig. 2.

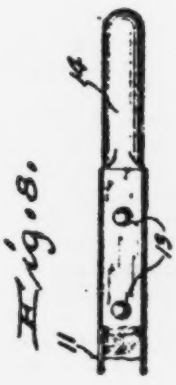


Fig. 8.

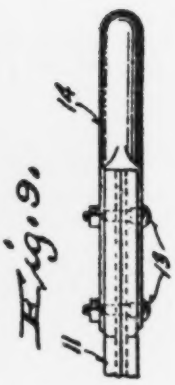


Fig. 9.

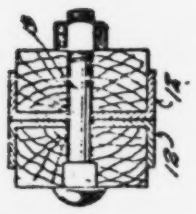


Fig. 3.

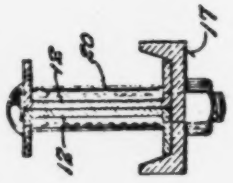


Fig. 4.

Inventor:
Irving R. Smith.
By Morsell Kenney & Morsell.
Attorneys.

Patented Mar. 23, 1926. 1,578,213

UNITED STATES PATENT OFFICE.

IRVING R. SMITH, OF WAUWATOSA, WISCONSIN.

WHEELBARROW.

Application filed June 4, 1923. Serial No. 643,343.

To all whom it may concern:

Be it known that I. IRVING R. SMITH, a citizen of the United States, and resident of Wauwatosa, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Wheelbarrows, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to wheelbarrows, and particularly to wheelbarrows formed completely of metal.

It is an object of this invention to construct a metal wheelbarrow, the arrangement and connection between the component parts thereof being such as to insure a rigid and durable construction which may be easily and cheaply manufactured and quickly assembled.

The invention, therefore, consists in the novel combination, construction and arrangement of parts, as will be more fully hereinafter described in the following specification, especially when considered in connection with the accompanying drawings wherein;

Figure 1 is a top plan view of a wheelbarrow constructed in accordance with this invention:

Fig. 2 is a side elevation of the same;

Fig. 3 is a detail sectional view, taken on the plane indicated by the line 3—3 in Fig. 2;

Fig. 4 is a sectional view taken on the plane indicated by the line 4—4 in Fig. 2;

Fig. 5 is a detail sectional view taken on the plane indicated by the line 5—5 of Fig. 2;

Fig. 6 is a fragmentary detail view;

Fig. 7 is a sectional view, taken on the plane indicated by the line 7—7 in Fig. 6;

Fig. 8 is a fragmentary sectional elevational view; and,

Fig. 9 is a view of the structure illustrated in Fig. 1, in plan view.

Referring now more particularly to the drawings wherein like reference characters indicate like parts, it will be noted that there is illustrated the body 10 of the wheelbarrow, which is formed preferably of metal and hopper-shaped. The body is supported upon a pair of longitudinally extending side members 11, each of which consists of a pair of channel bars 12, the bases of which are vertically disposed and arranged adjacent one another, as clearly illustrated in Fig. 3. These channel members which form the longitudinal supporting members of the wheelbarrow, are secured together by transversely extending bolts 13, and by other means yet to be referred to.

Secured to the free ends of each of the longitudinal members 11 are handles 14, which are split longitudinally to straddle the vertically arranged bases of the channel bars 12, the split ends of the handle 14 fitting in the channels of these channel bars, the bolt 13, while serving to clamp the channel bars together, also passing through the handles to rigidly secure the same to the longitudinal members 11.

The hopper or body 10 of the wheelbarrow is supported in an inclined position with reference to the longitudinal members 11 by means of channel-shaped supporting members 15, which rest upon the members 11, bolts 16 passing downwardly through the hopper 10, supporting members 15 and longitudinal members 11 for securing these parts together.

These bolts 16 also pass through the forward end of legs 17 which are formed of channel bars into which the lower flanges of the channel bars 12 extend. Thus, while the bolts 16 hold these parts together, the channel of the legs 17 tend to clamp these channel bars 12 together. Other bolts 18 may be employed for securing the hopper body 10 to the longitudinal members 11, while additional bolts 19 are provided which pass downwardly through the longitudinal members and through the legs 17. At the points at which the securing bolts pass through the longitudinal members 11, the vertical web of the channel members are bulged outwardly or enlarged as at 20 to provide sufficient space for an opening through which these bolts extend. This is particularly illustrated in Figs. 4, 6 and 7.

The forward ends of the longitudinal members 11 are united by a U-shaped channel member 21, connection being made by means of bolts 22 which extend downwardly through the longitudinal members and through the channel member 21. In this case also the edges of the channel-shaped members 12 which comprise the longitudinal member 11 fit within the channel of the U-shaped member 21, thus assisting in clamping these two channel members together.

The front of the hopper or body 10 is

supported and braced by V-shaped bracing members 23 which are bolted as at 24 to the hopper body and are secured by bolts 25 to the longitudinal members 11.

The bearings 26 for the wheel 27 are secured to the longitudinal members by U-shaped members 28, one leg of each U-shaped member being fastened by the bolts 25, other bolts 29 being employed for securing the other leg of each U-shaped member 28.

The ground engaging portions of the legs 17 are reinforced by strips or reinforcing plates 29 and braced by transverse and diagonally arranged cross members, 30 and 31.

From the foregoing it will be immediately apparent that a wheelbarrow constructed in accordance with this invention will be inherently rigid and durable, owing to the cooperative manner in which the parts are united. Furthermore, it is possible to construct a wheelbarrow almost completely of metal so that the same may be fully capable of withstanding the rough usage to which it may be put. Furthermore, the construction of the parts is such that the wheelbarrow may be quickly and easily assembled, thus facilitating and cheapening the manufacture of the same.

While the invention has been described herein in some detail it is not intended to unnecessarily limit the invention but reservation is made to make such changes as may come within the purview of the accompanying claims.

Having thus described the invention what is claimed is:

1. A wheelbarrow comprising a body, a pair of longitudinally extending supporting members, legs secured by bolts to said supporting members, handles secured to the ends of said supporting members, said supporting members each comprising a pair of channel bars clamped together with their side flanges extending laterally therefrom, the vertical webs of said channel bars being bulged outwardly forming passages for said bolts.

2. In a wheelbarrow construction, a hopper body, a pair of longitudinal supporting members, means for mounting said hopper body on said longitudinal members, legs secured to said longitudinal members, said longitudinal members being each formed of two channel-shaped members inversely arranged with their bases vertical, a connecting member for the forward ends of said longitudinal members, said member being formed of a channel bar, said longitudinal members resting in the channel, the vertical bases of said channel members being bulged outwardly, forming passages, and bolts passing through said passages and said connecting member.

3. In a metal wheelbarrow construction, a hopper-shaped body, a pair of longitudinally extending supporting members each formed of a pair of channel-shaped bars, means for supporting said hopper on said longitudinal members, means for connecting the forward ends of said longitudinal members and legs secured to said longitudinal members, said connecting means and legs being formed of channel-shaped members, the longitudinal members resting in said channels, and bolts for securing said connecting means and legs to said longitudinal members, the channel members of said longitudinal members being bulged to permit the passage of said bolts therethrough.

In testimony whereof, I affix my signature.

IRVING R. SMITH.

Feb. 23, 1965 J. MILLAR, JR. ET AL 3,170,707

WHEELBARROWS

Filed July 12, 1962 2 Sheets-Sheet 1

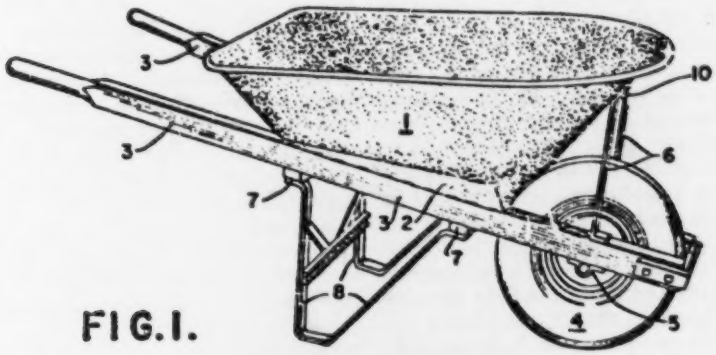


FIG. 1.

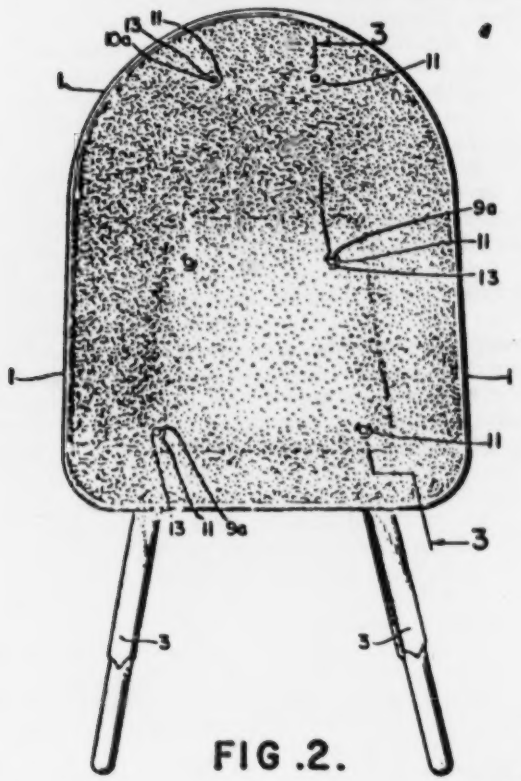


FIG. 2.

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WHEELBARROWS

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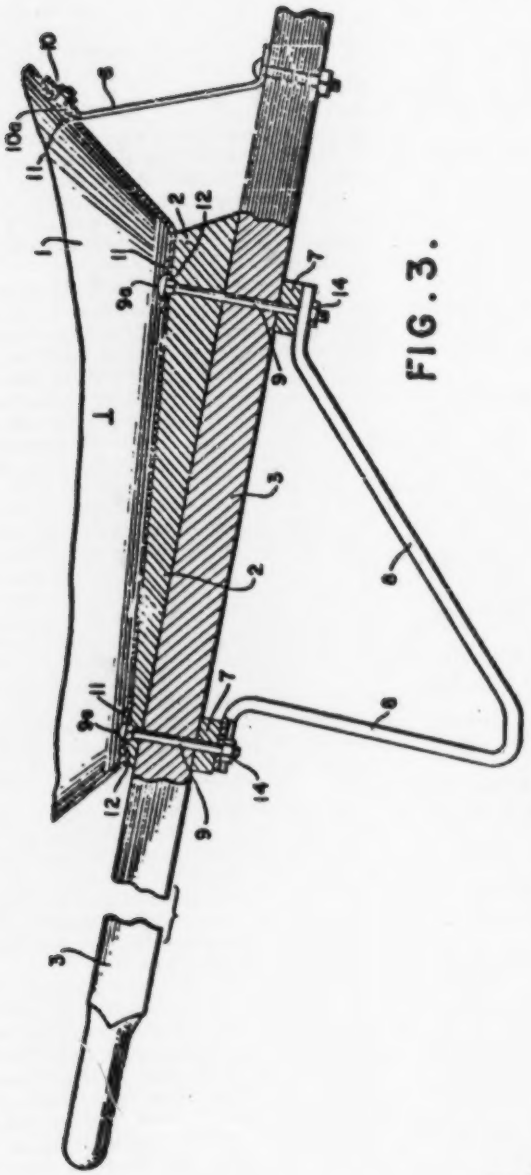

FIG. 3.

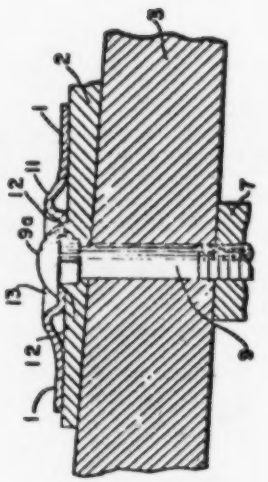

FIG. 4.

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WHEELBARROWS

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3 Claims. (Cl. 280—47.31)

The present invention relates to improvements in wheelbarrows, concrete carts, dump carts, contractors' carts, garden carts, and the like, and more particularly to novel means for securing the various parts thereof into a sturdy assembly.

More particularly, an object of the improvements is the provision of a novel securing means in the form of bolts which tie the various parts in a secure and trustworthy arrangement.

A further object of the improvements is the provision of a wheelbarrow assembly employing securing bolts in such a manner as to preserve an uninterrupted, smooth surface within the tray area. To this end the improvements provide a lip or embossed area surrounding the bolt heads, so as to present a raised area thereabout, which forms a shield around the bolt heads.

A still further object of the invention is to provide one or more protective areas, which for convenience are characterized as "nests," in which the bolt head resides, thereby preventing the bolt head from being an obstacle in the path of cleaning and unloading tools which workmen may employ in scraping the inner surface of the trays.

Another object of the improvements is to provide a novel tray for use in a wheelbarrow assembly which is economical in manufacture, efficient in use, and which permits an unlimited number of separate trays to be stacked or nested one within the other, for convenient shipment in commerce.

These and other objects will be apparent to those skilled in the art, upon reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of an assembled wheelbarrow, embodying the preferred form of the present improvements.

FIGURE 2 is a top plan view of the wheelbarrow illustrated in FIGURE 1, again showing the preferred form of the improvements.

FIGURE 3 is an enlarged section, taken on line 3—3 of FIGURE 2.

FIGURE 4 is a fragmentary view, further enlarged and in section, of the preferred form of the improvements shown in FIGURES 1 to 3.

Referring to the drawings, the present improvements are illustrated as applied to a wheelbarrow assembly. However, it will be obvious to those skilled in the art, that the improvements are equally adaptable for use in the assembly of concrete, dump, contractors' and garden carts or other containers. In all these products and others designed for the transportation and unloading of loose granular material, or wet or sludge materials, the present improvements are readily adaptable. The tray portion of the invention may be manufactured of metallic, plastic, or other rigid material.

Referring more particularly to FIGURES 1 and 2, the wheelbarrow consists of the drawn steel tray 1, having no rivets, seams or welds. The inner surface is therefore smooth, to facilitate unloading of granular or wet materials by dumping, or by the use of manual tools. The tools usually consist of hand shovels and the like, and the bottom and sides of tray 1 present an uninterrupted surface, so that the tools encounter no obstacles during use. The tray has rounded, curled edges to facilitate fast and controlled pouring of wet or sludge materials. This tray is

mounted on a carriage or chassis which comprises wooden wedge-shaped handle risers 2, which in turn are superimposed on wooden handles 3, which extend in one direction, beyond the tray, to serve as handles, and converge in the opposite direction, beyond the tray, to form spaced mountings in which the traction tire 4 is journaled in axle brackets 5.

The forward or discharge portion of the tray is supported in the area over the tire by vertical braces 6, which are secured in any desired manner to the handles 3. The handles 3 are maintained in the spread or diverging position shown in FIGURE 2, by means of transverse metal strips or braces 7, while the remainder of the assembly consists of channel-shaped leg members 8, which support the entire unit at the time of rest or loading. These elements may be secured to one another, by any suitable means. Upon reference to FIGURE 3, it will be seen that the tray 1, elements 2, 3, 6, 7 and 8 have perforated areas in register, to receive securing bolts, as hereinafter described.

As seen more clearly in FIGURE 2, tray 1 is mounted on the undercarriage or chassis by means of one or more bolts 9 and 10. In FIGURE 2 there are six such bolts, but in that view only the bolt heads 9a and 10a, are in view. In the bottom portion of the tray, two such bolts secure the tray to the righthand handle (see FIGURE 2) and also two more bolts secure the tray to the lefthand handle (see FIGURE 2). In addition, the two bolts 10, having heads 10a, secure the flared or discharge portion of the tray 1 to the vertical braces 6.

In a wheel barrow of this type, as it existed prior to the present improvements, it will be seen that the bolt heads 9a and 10a heretofore protruded above and into the inner surface of the tray, thereby creating obstacles to the continuous discharge of the wet materials, but more particularly creating obstacles to the scraping action of a workman using a hoe, shovel or other unloading tool. It is readily apparent that in the use of these unloading tools, they became caught on the bolt heads 9a and 10a, which not only was inconvenient, delayed the unloading and cleansing operation, but in some cases seriously jarred and caused sprains in the arms of the workmen, due to the sudden arresting of the manual unloading action or movement.

The present improvements therefore are designed particularly to eliminate the foregoing undesirable results outlined immediately above. To that end the preferred form in FIGURES 1 to 4 provides an annular lip or emboss raised from the surface of the tray itself. These embossed rings 11 surround the holes or perforations 12, and each provide a depressed area or nest 13, as seen quite clearly in FIGURE 4.

The annular ring 11, which is raised in the nature of a lip completely around the holes 12, serves as a housing within which the bolt heads 9a and 10a may nest. The ring 11 protrudes above the bolt head, so as to create a miniature "hill" thereabout. As clearly seen in FIGURES 3 and 4, these rings 11 are in the form of a crater, and consist of inner and outer portions tapering inwardly from the tray bottom. Accordingly, as the workman moves an unloading tool along the inner surface of the tray, the sharp edges of those tools will encounter the embossed rings, which will cause the tool or tool edges to glide over the bolt heads 9a and 10a without interruption, and without being arrested or becoming caught on the bolt heads.

Embossed rings 11, providing nests 13 for the bolt heads as seen in FIGURE 3, are provided not only in the bottom of the tray but also in the flared forward unloading wall thereof. These same refinements of construction are provided in six places, as clearly seen in FIGURE 2.

The type of bolt and bolt head indicated as 10 and 10a comprise slotted truss head screws, because in this particular location, the metal tray is secured to a metal brace. However, the longer bolts 9, with dome shaped heads 9a, are known as carriage bolts, having a squared or hexagonal shank or neck immediately under the head and between the head and the cylindrical form of the bolt. In this particular refinement, as seen in FIGURES 3 and 4, the bolt extends through perforated registering areas in the tray bottom, riser 2, handle 3, horizontal brace 7 and leg member 8 It is apparent that elements 2, and 3, are made of wood. The lower portion of the bolt is screw threaded to receive the nut 14. When assembled and in use, it will be seen that the bolt head 9a is housed within the embossed nest 13, and extends through the tray, handle riser 2, handle 3, brace 7, and leg 8. The nut 14, being screwed home, securely unites all these parts in a sturdy relationship, which condition is not sacrificed by virtue of the provision of the protective and embossed rings 11. It is apparent that the squared neck of the bolts at the time of assembly bite into the wood of the risers 2 at the perforated areas, and this feature gives added stability to the assembly.

It is significant that the present improvements have a distinct added advantage when being shipped in commerce. It is rather standard practice for the wheelbarrow illustrated in FIGURE 1 to be shipped from the manufacturing plant in a "knocked down" condition. That means that the undercarriage or chassis may be taken apart and shipped in a more convenient shape, while the trays, having no protruding parts, may be stacked or nested one within the other, in unlimited numbers, thereby producing great economy in shipment.

A primary advantage, however, in the improvements shown in FIGURES 1 to 4, consists in the economy in manufacture. In achieving the desirable result, eliminating bolt head obstacles in the tray surface, the present improvements provide the perforated areas and embossed rings with a minimum of stamping operations, with no additional operations necessary on the undercarriage parts, such as on risers 2 or handles 3. Accordingly, unusual speed in assembly-line production can be achieved with the simple solution of a troublesome problem with which the trade has been confronted. This primary advantage is achieved by providing the tray with a substantially continuous lower wall which includes the perforated areas within the embossed rings. The embossed portions of the tray are gradually tapered only upwardly from this wall, and thus do not present an irregularity which interferes with the mounting of the tray upon the chassis. When the tray and chassis are attached together, each bolt projects through a tray perforation and through the surface on the chassis which supports the tray. In the disclosed embodiment, the supporting means is the uppermost surface of the riser 2.

In the foregoing description of the preferred form, considerable emphasis has been placed on the provision of

an annular embossed ring, protruding above the inner surface of the tray and above the bolt head. The ring form is preferred because it lends itself to easy and economical manufacture by a suitable die. It is understood however, that the ring may be replaced by a pair of raised embossed knobs or small ridges located on opposite sides of the bolt head.

It is noteworthy that the trays which are subjected to considerable loading and unloading abuse, when damaged beyond use or repair, are readily replaceable without the necessity of employing a new undercarriage.

The present improvements therefore provide a simple, economical and workable solution to the common problem of unloading and cleansing wheelbarrow trays. These and other refinements of construction, may occur to those skilled in the art, without departing from the spirit and scope of the appended claims.

We claim:

1. A portable cart comprising a chassis, a tray superimposed on said chassis, headed securing means attaching said tray to said chassis, said tray having a substantially continuous wall therein, said continuous wall having perforated areas therein, said tray having embossed areas protruding above said continuous wall proximate to each of said perforated areas, each of said embossed areas having its portions most remote from its respective perforated area gradually tapered upwardly from said continuous wall, each of said securing means having a head above said tray nested within one of said embossed areas, said chassis including supporting means lying beneath and supporting said continuous wall of said tray, and each of said securing means having a shank penetrating said supporting means to attach said tray to said chassis.

2. A portable cart as defined in claim 1 wherein each of said embossed areas is ring shaped and is located to entirely surround its respective perforated area.

3. A portable cart as defined in claim 1 wherein said chassis includes a pair of generally horizontal handle elements and riser elements, said riser elements located adjacent to and above said handle elements, and said supporting means is an upper surface of said riser elements.

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BENJAMIN HERSH, *Examiner.*

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Drawing of Accused MTD Wheelbarrow in Disassembled Form